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CATALOGUE

OF THE

LEPIDOPTERA PHALÆNÆ

IN THE

BRITISH MUSEUM.

VOLUME VI.

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CATALOGUE

OF THE

NOCTUIDÆ

IN THE

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BY

SIR GEORGE F. HAMPSON, BART.

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PREFACE.

—o—

The subject of Vol. VI. of the 'Catalogue of Moths' is the classification of the *Cucullianæ*, the third of the fifteen subfamilies into which the *Noctuidæ* are divided, 692 species belonging to 111 genera being described in it. The subfamily is characterised by its trifid neuration of the hind wing combined with spineless tibiæ and smooth eyes surrounded by eye-lashes of bristle-like hairs, and forms a group of genera very closely related to the *Acronyctinæ*, the lowest of the subfamilies of the *Noctuidæ Trifinæ*.

Sir George Hampson has again to thank all those who have helped him with the earlier Volumes of the Catalogue, for the loan of specimens, and assistance with the present Volume, especially Herr R. Püngeler of Aachen and Prof. J. B. Smith of New Brunswick, the latter having not only presented to the British Museum numerous species of Nearctic *Noctuidæ* hitherto unrepresented in the Collection, but also given much useful criticism and advice during his recent visit to London. In addition he has to thank Dr. Fletcher of Ottawa and Mr. H. V. Hudson of Wellington, New Zealand, for the gift of several species new to the Collection. Plate CVIII. will appear with Vol. VII. of the Catalogue.

E. RAY LANKESTER,
Director.

British Museum (Natural History),
November 1st, 1906.

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CATALOGUE

OF

LEPIDOPTERA PHALÆNÆ.

Family NOCTUIDÆ.

Subfamily CUCULLIANÆ.

Proboscis usually well-developed, sometimes aborted or absent; palpi usually short, upturned or porrect, the 3rd joint sometimes long and dilated at extremity, in *Xantholeuca* rostriform; frons sometimes with rounded prominence with corneous plate below it, or with corneous processes of various forms; eyes naked, overhung by more or less developed bristly cilia from their margins, the eyes usually large and round, sometimes small and reniform; antennæ usually ciliated, sometimes serrate or pectinated, more rarely laminated and almost simple; head and thorax clothed with hair and scales when there are usually crests on the pro- and meta-thorax or a ridge-like dorsal crest, or clothed with hair only, the tegulæ sometimes produced dorsally into a ridge, or in *Cucullia* and allies produced behind into a more or less developed hood over the thorax; tibiæ without spines, the fore tibia sometimes with terminal claws; the proximal joints of fore tarsi sometimes with a series of curved claw-like spines; abdomen usually with a series of dorsal crests or one crest at base. Wings usually rather broad, but often long and narrow, the termen rounded or crenulate, rarely slightly angled at middle; fore wing with vein 1 *a* weak, not anastomosing with vein 1 *b*, 1 *c* absent; 2 from middle of cell; 3 and 5 from near lower angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 1 *a* and *b* present, 1 *c* absent; 3, 4 from lower angle of cell; 5 obsolescent from or from just below middle of discocellulars; 6, 7 from

upper angle or shortly stalked; S arising free, then bent downwards and touching the cell, then again diverging. In *Thecophora* the male has a very large boat-shaped fovea in the disc of hind wing, the extremity of the subcostal nervure being dilated and played on by the spines of the elongate 1st joint of hind tarsus, the tibiæ being shortened.

The imagos mostly appear in the autumn or early spring, sometimes hibernating.

Larva smooth, the warts with one hair: all the prolegs present, the 12th somite with more or less developed dorsal hump, in *Cucullia artemisiæ* there are subdorsal series of double hump-like warts.

The larvæ of *Cucullia* and allies are usually brightly coloured, feeding exposed on plants.

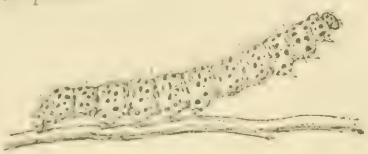


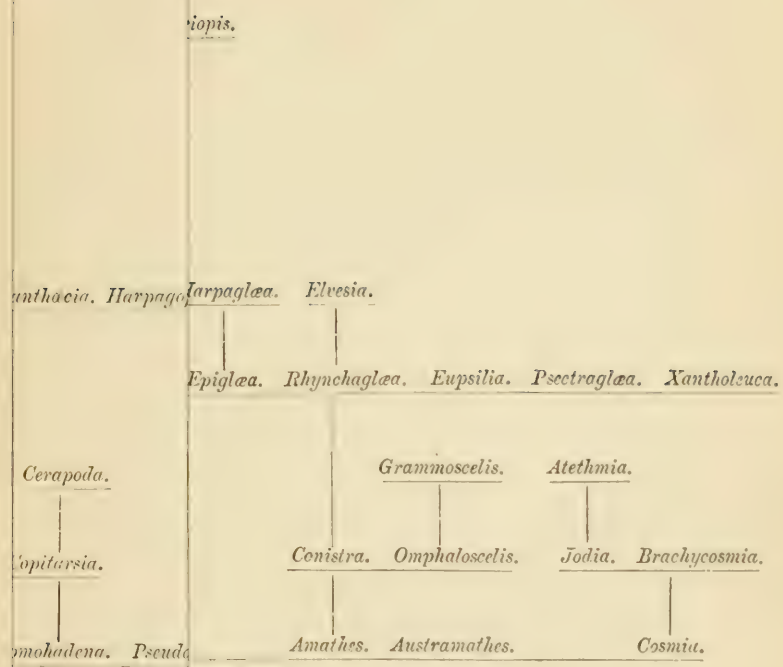
Fig. 1.—Larva of *Cucullia verbasci*. ½

Key to the Genera.

A. Tegulæ more or less strongly produced behind into a hood.
  a. Fore tibiæ with curved claw on inner side and short claw on outer ..... Nycteropileta, p. 83.
  b. Fore tibiæ with long curved claw on inner side. Copicucullia, p. 9.
  c. Fore tibiæ with short medial claw at extremity.
    a^1. Frons with truncate prominence ..... Argyromata, p. 82.
    b^1. Frons with slight rounded prominence ..... Cheligalea, p. 13.
  d. Fore tibiæ without claw.
    a^1. Frons with truncate prominence with raised edges ..... Brachygalea p. 8.
    b^1. Frons with slight rounded prominence.
      a^2. Abdomen with dorsal crests.
        a^3. Thorax clothed entirely with scales ..... Neogalea, p. 7.
        b^3. Thorax clothed with hair and hair-like scales ..... Cucullia, p. 14.
        c^3. Thorax clothed with hair only ..... Argyrogalea, p. 81.
      b^2. Abdomen without dorsal crests.
        a^3. Thorax clothed chiefly with scales, metathorax with triangular crest ..... Opsigalea, p. 84.
        b^3. Thorax clothed with hair and a few hair-like scales ..... Empusada, p. 85.
    c^1. Frons without prominence ..... Lophoterges, p. 91.

B. Tegulæ not produced behind into a hood.
  a. Frons with truncate corneous prominence with raised edges and conical process in centre hollowed out in front.
    a^1. Fore tibiæ with curved claw at extremity on inner side ..... Copiphana, p. 95.
    b^1. Fore tibiæ without claw.
      a^2. Fore tarsi with two curved claw-like spines on 1st joint ..... Harpagophana, p. 115.

[*To face* p. 2.


iopis.
unthacia. Harpago
Harpaglæa. Elvesia.
Epiglæa. Rhynchaglæa. Eupsilia. Psectraglæa. Xantholeuca.
Cerapoda.
Grammoscelis. Atethmia.
Copitarsia.
Conistra. Omphaloscelis. Jodia. Brachycosmia.
mohadena. Pseud
Amathes. Austramathes. Cosmia.

b^2. Fore tarsi without claw-like spines on 1st joint.
a^3. Thorax clothed with hair and scales mixed ..... Metopoceras, p. 116.
b^3. Thorax clothed with hair only ..... Cleophana, p. 97.
b. Frons with truncate corneous prominence with raised edges and trilobate process from lower edge ..... Metalopha, p. 105.
c. Frons with truncate corneous prominence with raised edges and shovel-shaped process from lower edge.
a^1. Head and thorax clothed with hair and scales mixed and without crests ..... Ammetopa, p. 120.
b^1. Head and thorax clothed with hair only and with crests ..... Amephana, p. 106.
d. Frons with corneous prominence with raised edges and no process.
a^1. Head and thorax clothed chiefly with scales. Grammoscelis, p. 468.
b^1. Head and thorax clothed with hair only..... Omphaloscelis, p. 469.
e. Frons with small truncate conical prominence... Criophasia, p. 122.
f. Frons with rounded prominence with corneous plate below it..... Omphalophana, p. 109.
g. Frons with rounded prominence roughened in front.
a^1. Abdomen with dorsal series of crests ..... Dryotype, p. 228.
b^1. Abdomen with dorsal crest at base only.
a^2. Proboscis absent ..... Derthisa, p. 229.
b^2. Proboscis fully developed ..... Aporophyla, p. 234.
h. Frons smooth.
a^1. Fore tibiæ with curved claw at extremity.
a^2. Frons with rounded prominence ..... Copitype, p. 206.
b^2. Frons without prominence.
a^3. Frons with curved corneous plate below it. Pseudanthœcia, p. 114.
b^3. Frons without corneous plate below it.
a^4. Tegulæ produced to a slight dorsal ridge.
a^5. Fore tibiæ short with short claw on outer side and long claw on inner; thorax clothed chiefly with scales... Lepipolys, p. 143.
b^5. Fore tibiæ with long claw on inner side only; thorax clothed with hair. Brachionycha, p. 202.
b^4. Tegulæ not produced to a dorsal ridge.
a^5. Fore tibiæ with corneous plate at extremity.
a^6. Thorax clothed with rough scales; abdomen with dorsal crests ..... Psaphida, p. 207.
b^6. Thorax clothed with hair and hair-like scales ..... Eutolype, p. 210.
c^6. Thorax clothed with hair only ..... Copipanolis, p. 213.
b^5. Fore tibiæ without corneous plate at extremity.
a^6. Thorax clothed chiefly with scales... Oncocnemis, p. 145.
b^6. Thorax clothed with hair and hair-like scales.
a^7. Pro- and metathorax with spreading crests ..... Ectochela, p. 179.
b^7. Pro- and metathorax without crests..... Homoncocnemis, p. 180.
b^1. Fore tibiæ without claw at extremity.
a^2. Fore tarsi with curved claw-like spines on outer side of 1st joint.

a^3. Thorax clothed chiefly with scales; abdomen with dorsal crest at base only ... CERAPODA, p. 181.
b^3. Thorax clothed with hair and hair-like scales mixed with some scales; abdomen with dorsal crest at base only ..... COPITARSIA, p. 183.
c^3. Thorax clothed with hair only; abdomen without crests.
a^4. Prothorax with triangular crest ..... HARPAGLÆA, p. 429
b^4. Thorax without distinct crest ..... PSECTRAGLÆA, p. 439.
b^2. Fore tarsi without claw-like spines on outer side of 1st joint.
a^3. Proboscis aborted, non-functional.
a^4. Thorax clothed with rough hair and scales and with spreading crests.
a^5. Proboscis absent; fore wing with the termen non-crenulate ..... EPIDEMAS, p. 215.
b^5. Proboscis weak; fore wing with the termen crenulate ..... RHODOCHLÆNA, p. 131.
b^4. Thorax clothed with hair and hair-like scales.
a^5. Eyes small, reniform; thorax with slight triangular crest ..... BRACHYCOSMIA, p. 496.
b^5. Eyes large, rounded; thorax with spreading crests ..... LEUCOCHLÆNA, p. 132.
c^4. Thorax clothed with hair only.
a^5. Eyes small, elliptical.
a^6. Fore wing narrow ..... CTEIPOLIA, p. 421.
b^6. Fore wing broad, triangular ..... FERALIA, p. 196.
b^5. Eyes large, rounded.
a^6. Metathorax with double crest; patagia curled up at extremities ..... OXICESTA, p. 112.
b^6. Thorax without crests; patagia normal.
a^7. Fore wing narrow, the costa rather concave ..... ULOCHLÆNA, p. 137.
b^7. Fore wing broad, the costa arched. DASYPOLIA, p. 422.
b^3. Proboscis fully developed.
a^4. Tegulæ produced into a more or less prominent dorsal ridge.
a^5. Palpi with the 3rd joint long and dilated at extremity.
a^6. Abdomen with dorsal series of crests, not flattened ..... EUSCOTIA, p. 241.
b^6. Abdomen flattened, without dorsal series of crests.
a^7. Fore wing with the termen and cilia very highly crenulate..... ELYESIA, p. 434.
b^7. Fore wing with the termen very slightly crenulate..... RHYNCHAGLÆA, p. 435.
b^5. Palpi with the 3rd joint short.
a^6. Abdomen dorsally flattened.
a^7. Palpi not forming a beak.
a^8. Thorax clothed with hair and hair-like scales.
a^9. Prothorax with divided crest ... GRAPTOLITHA, p. 246.
b^9. Prothorax without distinct crest. XYLINA, p. 280.
b^8. Thorax clothed with hair only.
a^9. Prothorax with triangular crest.
a^{10}. Fore wing with the termen crenulate..... EUPSILIA, p. 436.

b^{10}. Fore wing with the termen evenly curved..... Epiglæa, p. 432.
b^{9}. Prothorax without distinct crest.
a^{10}. Abdomen very broad and much flattened ..... Conistra, p. 443.
b^{10}. Abdomen normal, slightly flattened..... ... Amathes, p. 470.
b^{7}. Palpi produced at extremity into a beak; prothorax with triangular crest ..... Xantholeuca, p. 441.
b^{6}. Abdomen not dorsally flattened.
a^{7}. Prothorax with divided crest ..... Lithophane, p. 243.
b^{7}. Prothorax with distinct spreading crest.
a^{8}. Palpi with the 3rd joint upturned.
a^{9}. Abdomen with dorsal crests.
a^{10}. Thorax smoothly clothed with scales and with distinct crests. Xylotype, p. 288.
b^{10}. Thorax roughly clothed with long scales and hair, with slight crests.
a^{11}. Abdomen with large fan-shaped crest on 2nd segment. Behrensia, p. 287.
b^{11}. Abdomen without large crest on 2nd segment ..... Eurotype, p. 289.
b^{9}. Abdomen without dorsal crests. Hypnotype, p. 411.
b^{8}. Palpi with the 3rd joint porrect.
a^{9} Head and thorax clothed chiefly with scales ..... Dichonia, p. 292.
b^{9}. Head and thorax clothed with hair and hair-like scales..... Callierges, p. 93.
c^{7}. Prothorax with ridge-like crest.
a^{8}. Fore wing with the termen crenulate, angled at vein 4..... Atethmia, p. 493.
b^{8}. Fore wing with the termen not crenulate, oblique towards tornus. Jodia, p. 495.
d^{7}. Prothorax without distinct crest.
a^{8}. Abdomen with dorsal crests.
a^{9}. Fore wing with the termen obliquely curved ..... Pleroma, p. 295.
b^{9}. Fore wing triangular, the termen more erect ..... Neumichtis, p. 298.
b^{8}. Abdomen without dorsal crests ... Calophasia, p. 123.
b^{4}. Tegulæ not produced into a distinct dorsal ridge.
a^{5}. Abdomen with dorsal crests on basal segments.
a^{6}. Thorax clothed with hair and scales mixed.
a^{7}. Eyes rather small.
a^{8}. Thorax smoothly clothed with scales ..... Nyctycia, p. 299.
b^{8}. Thorax clothed with long rough scales.
a^{9}. Frons with curved corneous plate below..... Protophana, p. 121.
b^{9}. Frons without corneous plate below..... Thecophora, p. 301.
c^{8}. Thorax clothed with hair and hair-like scales ..... Dryobota, p. 302.

b^7. Eyes large.
a^8. Thorax clothed chiefly with scales.
a^9. Fore femora greatly dilated ..... AGRIOPIS, p. 317.
b^9. Fore femora not dilated.
a^{10}. Thorax quadrately scaled.
a^{11}. Prothorax with divided crest. DASEUPLEXIA, p. 303.
b^{11}. Prothorax with spreading crest..... MEGANEPHRIA, p. 305.
b^{10}. Thorax not quadrately scaled.
a^{11}. Thorax with divided ridge-like crest..... PACHYPOLIA, p. 311.
b^{11}. Pro- and metathorax with spreading crests.
a^{12}. Fore wing broad, the apex not produced.
a^{13}. Thorax clothed chiefly with large rounded scales..... LAMPROSTICTA, p. 313.
b^{13}. Thorax clothed with small scales and hair ..... EUMICHTIS, p. 321.
b^{12}. Fore wing narrow, the apex somewhat produced.
a^{13}. Thorax smoothly scaled ... XYLINISSA, p. 355.
b^{13}. Thorax rather roughly clothed with scales ..... PSEUDANARTA, p. 193.
b^8. Thorax clothed with rough spatulate scales and hair ..... VALERIA, p. 347.
c^8. Thorax clothed with hair with a few scales mixed ..... ANTITYPE, p. 357.
b^6. Thorax clothed with hair and hair-like scales.
a^7. Palpi with the 3rd joint very long, dilated at extremity and porrect... SYDIVA, p. 378.
b^7. Palpi with the 3rd joint short.
a^8. Thorax with divided crest; fore wing with the termen crenulate. RHIZOTYPE, p. 373.
b^8. Thorax with spreading crest; fore wing with the termen non-crenulate..... BOMBYCIA, p. 217.
c^6. Thorax clothed with hair only ..... LATHOSEA, p. 205.
b^5. Abdomen with dorsal crest at base only.
a^6. Thorax clothed chiefly with scales.
a^7. Prothorax with divided crest ..... BRYOTYPE, p. 382.
b^7. Pro- and metathorax with spreading crests.
a^8. Fore wing long and narrow, the termen not crenulate ..... CLOANTHA, p. 239.
b^8. Fore wing short and broad.
a^9. Fore wing with the termen crenulate.
a^{10}. Frons with transverse ridge of scales..... CHARIDEA, p. 140.
b^{10}. Frons without transverse ridge of scales ..... ATHAUMASTA, p. 380.
b^9. Fore wing with the termen not crenulate.
a^{10}. Palpi upturned, reaching vertex of head ..... ANDESIA, p. 142.
b^{10}. Palpi porrect, short ..... BRACHYLOMIA, p. 220.
c^7. Pro- and metathorax without crests. HYPOTYPE, p. 384.

b^6. Thorax clothed with hair with a few scales mixed, and without distinct crests ..... Bryomima, p. 386.
c^6. Thorax clothed with hair and hair-like scales and with spreading crests on pro- and metathorax ..... Blepharidia, p. 394.
d^6. Thorax clothed with hair only and without distinct crests.
a^7. Fore wing with the termen crenulate ..... Trichoridia, p. 400.
b^7. Fore wing with the termen evenly curved ..... Dasysternum, p. 407.
c^5. Abdomen without dorsal crests.
a^6. Eyes small, reniform.
a^7. Thorax clothed with hair and scales ..... Sympistis, p. 412.
b^7. Thorax clothed with hair only..... Hypsophila, p. 418.
b^6. Eyes large, rounded.
a^7. Thorax clothed chiefly with scales.
a^8. Fore wing narrow, the apex produced ..... Hypomecia, p. 94.
b^8. Fore wing broader, the apex and termen rounded ... . Homohadena, p. 186
b^7. Thorax clothed with hair and hair-like scales.
a^8. Thorax clothed with rough hair and hair-like scales ..... Momaphana, p. 199.
b^8. Thorax smoothly clothed with hair and hair-like scales.
a^9. Prothorax with divided crest ... Austramathes, p. 492.
b^9. Prothorax with large spreading crest ..... Hillia, p. 224.
c^9. Prothorax with slight crest ..... Litholomia, p. 222.
c^7. Thorax clothed with hair only.
a^8. Thorax with ridge-like crest ..... Cosmia, p. 497.
b^8. Thorax without crests.
a^9. Palpi upturned, reaching vertex of head.
a^{10}. Fore wing narrow, the apex somewhat produced, the termen obliquely curved ..... Caffristis, p. 227.
b^{10}. Fore wing broad, the apex and termen rounded ..... Dasythorax, p. 426.
b^9. Palpi porrect, short ..... Homoglea, p. 513.

Genus **NEOGALEA**, nov.

Type, *N. braziliensis*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint broadly scaled in front; frons with slight rounded prominence with corneous plate below it; antennæ of male nearly simple; head and thorax clothed with scales only, the tegulæ produced behind into a hood and to a dorsal ridge; tibiæ broadly fringed with hair; abdomen with dorsal crests on basal segments. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2058. Neogalea braziliensis, n. sp.

♀. Head and thorax clothed with grey and dark brown scales: frons with blackish band; tegulæ with dark lines near base and at middle; abdomen whitish, dorsally suffused with brown, ventrally irrorated with brown. Fore wing grey thickly irrorated and suffused with brown; the veins with slight dark streaks; the antemedial line represented by slight dark streaks below costa and in and below cell; postmedial line double and bent outwards below

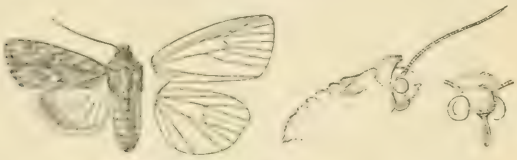


Fig. 2.—*Neogalea braziliensis*, ♀. ½.

costa, then represented by a series of slight dark streaks connected by a very ill-defined line: the terminal area with slight dark streaks in the interspaces; cilia chequered brown and grey. Hind wing semihyaline white; the costal area and veins of terminal half brown; the terminal area brown, narrowing to tornus cilia white, entirely brown at apex, and with their bases brown on apical half.

Hab. Brazil, Rio Janeiro, 1 ♀ type. *Exp.* 36 millim.

Genus **BRACHYGALEA**, nov.

Type, *B. leucorhabda*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front; frons with truncate prominence with raised edges; antennæ of male almost simple; tegulæ produced behind into a slight hood; head and thorax clothed with hair and hair-like scales; tibiæ fringed with hair; abdomen with slight dorsal crests on two basal segments. Fore wing with the apex somewhat produced and the termen obliquely rounded, veins 3 & 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

2059. Brachygalea leucorhabda, n. sp.

Head and thorax clothed with white and fuscous scales mixed: tegulæ with blackish line near base and two lines filled in with white towards tips; abdomen white irrorated with brown. Fore wing bluish white very thickly irrorated with fuscous; the veins streaked with black; a white fascia below base of cell, defined above and below by fine black streaks confluent with the very elongate black-defined claviform; a white fascia in cell from before middle to extremity defined by fine black streaks and with a fine streak through its middle, confluent with a small white mark at

lower angle of cell; some white points on costa towards apex; the interspaces of terminal area with blackish streaks and with short oblique white streaks below veins 7, 6, 4, 3. Hind wing fuscous.

Fig. 3.—*Brachygalea leucorhabda*, ♂. ½.

the interspaces of basal half whitish; cilia white except at base; the underside white irrorated with fuscous.

Hab. Algeria, Biskra (*Walsingham*), 2 ♂, 2 ♀, type. *Exp.* 34 millim.

Genus COPICUCULLIA.

Type.

Copicucullia, Smith, Trans. Am. Ent. Soc. xxi. p. 84 (1894) ..... *culepis.*

Proboscis fully developed; palpi obliquely upturned, fringed with long hair in front; frons with slightly roughened prominence with corneous plate below it; eyes large, rounded; antennæ simple in both sexes; head and thorax clothed with hair and hair-like scales, the tegulæ produced behind into a hood, the pro- and metathorax with slight crests; fore tibiæ with curved claw on inner side; abdomen with dorsal crests on basal segments. Fore wing with the termen obliquely curved, the inner margin lobed near base; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from below middle of discocellulars; 6, 7 from upper angle or stalked; 8 anastomosing with the cell near base only.

A. Fore wing with the orbicular and reniform distinctly defined.
  a. Fore wing with the ground-colour grey-white ..... *antipoda.*
  b. Fore wing with the ground-colour blue-grey ..... *propinqua.*
B. Fore wing with the orbicular and reniform obsolete.
  a. Fore wing with the ground-colour grey.
    a^1. Fore wing with black streak from postmedial line to termen at vein 2.
      a^2. Fore wing with black streak on medial part of inner margin.
        a^3. Fore wing with the postmedial line present ..... *culepis.*
        b^3. Fore wing with the postmedial line obsolete ..... *astigma.*
      b^2. Fore wing without black streak on medial part of inner margin ..... *albipuncta.*
    b^1. Fore wing with two obliquely-placed subterminal black marks below vein 2 ..... *syriaca.*
  b. Fore wing with the ground-colour ochreous white ..... *narnensis.*
  c. Fore wing with the ground-colour ochreous yellow ..... *sublutea.*

2060. Copicucullia antipoda. (Plate XCVI. fig. 16.)

Cucullia antipoda, Streck. Lep. Rhop. & Het. p. 129 (1878); Smith, Cat. Noct. N. Am. p. 236.

♂. Head and thorax violaceous white mixed with dark brown;

frons reddish brown; tegulæ with black medial line and brown tips; patagia edged with brown above; tibiæ with black streak; abdomen tinged with pale brown and irrorated with dark brown, the dorsal crests blackish. Fore wing violaceous white, irrorated with purplish brown; subbasal short black streaks below costa, in and below cell; antemedial line very strongly angled outwards below costa and cell and above inner margin where there is an oblique dark streak beyond it; claviform small, incompletely defined by black; orbicular and reniform small and close together, incompletely defined by black and with some black marks round their centres; postmedial line bent outwards below costa, then almost obsolete to vein 2, forming almost a W-mark in submedian interspace, then very strongly angled outwards on vein 1, some pale points beyond it on costa; the interspaces of terminal area with diffused dark streaks; subterminal line represented by slight, somewhat dentate marks, a more prominent streak above vein 6, a short streak above vein 4, and two below vein 2; a terminal series of black striæ; cilia with two brown lines through them. Hind wing white, the veins and termen brown; the underside irrorated with brown.

Hab. Canada, Br. Columbia, Pantecton (*Mrs. Nicholl*), 1 ♂; U.S.A., Colorado, 1 ♂, Arizona. *Exp.* 42 millim.

2061. Copicucullia propinqua.

Copicucullia propinqua, Smith, Trans. Am. Ent. Soc. xxi. p. 85, pl. iv. f. 11 (1894); Dyar, Cat. Lep. N. Am. p. 173.

Head and thorax purplish grey mixed with dark brown; tegulæ with medial black line; tibiæ striped with black; abdomen with the dorsal crests blackish. Fore wing purplish grey irrorated with brown; the veins and submedian fold with blackish streaks; the interspaces of terminal area with diffused brown streaks; antemedial line very indistinct, strongly dentate outwards in interspaces

Fig. 4.—*Copicucullia propinqua* ♂. ½.

and with an oblique black streak beyond it above inner margin; claviform very indistinctly defined by black and with slight pale streak beyond it; orbicular and reniform small, close together, defined by black and with some blackish marks in centre, the former round; postmedial line indistinct, hardly traceable between veins 7 and 2, bent outwards below costa, angled inwards in submedian fold and outwards on vein 1; subterminal line represented by a series of slight dentate marks, a more prominent streak above

vein 6 and oblique streak below vein 2; a terminal series of black striæ; cilia with two brown lines through them. Hind wing white, the veins and terminal area suffused with fuscous brown, most strongly in female; cilia white; the underside white irrorated with brown and with the veins brown.

Hab. U.S.A., Colorado, Denver (*Bruce, Cockerell, Oslar*), 4 ♂, 5 ♀, Durango, 1 ♀, Glenwood Springs, 1 ♀. *Exp.* 42–50 millim.

*2062. Copicucullia eulepis.

Cleophana eulepis, Grote, Bull. Buff. Soc. iii. p. 86 (1875); Smith, Cat. Noct. N. Am. p. 236.

♀. Whitish grey; tegulæ with black line at base; metathorax with the spreading crest blackish on outer sides; abdomen without crests. Fore wing whitish at base; the ante- and postmedial lines oblique, indistinct; the veins slightly marked with black; orbicular and reniform absent; a black streak on inner margin between the ante- and postmedial lines, the latter double, obsolescent except towards costa and inner margin, with a black streak from it to termen at vein 2 and some white points beyond it on costa; a wedge-shaped black mark from termen below vein 4. Hind wing blackish fuscous, paler at base; the cilia white; the underside pale fuscous, the marginal areas irrorated with grey.

Hab. U.S.A., Oregon, California. *Exp.* 35 millim. This species is unknown to me.

2063. Copicucullia astigma. (Plate XCVI. fig. 17.)

Copicucullia astigma, Smith, Trans. Am. Ent. Soc. xxi. p. 85, pl. iv. f. 8 (1894); Dyar, Cat. Lep. N. Am. p. 173.

♀. Head and thorax grey mixed with brown; frons with black bar above; tegulæ with black line near base; tibiæ striped with black; abdomen grey irrorated with brown and dorsally tinged with brown. Fore wing grey-white thickly irrorated with brown; the veins finely streaked with black; a fine black streak in submedian fold from base to the oblique black fascia from submedian fold beyond middle to termen at vein 2; a black fascia on inner margin from before middle to near tornus; short black streaks above veins 6 and 4; cilia white with two brown lines through them. Hind wing pale nearly uniformly suffused with brown; cilia white with a brown line near base; the underside whitish irrorated with brown, the veins and terminal area suffused with brown.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 1 ♀. *Exp.* 46 millim.

*2064. Copicucullia alfarata.

Cucullia alfarata, Streck. Lep., Rhop. & Het., Suppl. 1, p. 9 (1898); Dyar, Cat. Lep. N. Am. p. 173.

Pale grey; tegulæ with black lines and tips; abdomen white with the crests and three terminal segments brown. Fore wing

with black streak below cell to antemedial line which is strongly angled outwards in the interspaces; orbicular and reniform absent; postmedial line obsolete except from vein 2 to inner margin, strongly incurved and defined by black in submedian interspace, with a black streak from it to termen at vein 2; veins black; the costal area with a dark shade; an oblique dark subapical shade; a terminal series of black lunules. Hind wing white with brown terminal band; cilia white.

Hab. U.S.A., Florida, St. Augustine. *Exp.* 40 millim. This species is unknown to me.

2065. Copicucullia syrtana. (Plate XCVI. fig. 18.)

Cucullia syrtana, Mab. Bull. Soc. Ent. Fr. 1888, p. 51; id. Nov. Lep. p. 65, pl. xi. f. 3; Staud. Cat. Lep. pal. p. 216.

Head and thorax grey-white mixed with dark brown; tegulæ with black line near base, two medial lines and a line at tips; tibiæ slightly streaked with black; abdomen ochreous white irrorated with brown. Fore wing grey-white tinged with ochreous in parts, irrorated and more or less suffused with black; the veins streaked with black; a black streak in base of submedian fold; antemedial line almost obsolete towards costa, very strongly angled outwards in submedian fold and above inner margin and inwards on vein 1; postmedial line obsolete except below vein 2, where it is angled inwards in submedian fold and outwards on vein 1; a series of diffused short streaks in the interspaces running obliquely from termen below apex to lower angle of cell; two short subterminal streaks below vein 2. Hind wing whitish, the veins and terminal area suffused with fuscous; the underside whitish irrorated with fuscous.

Hab. Algeria, Biskra (*Walsingham*), 2 ♂, 5 ♀; Canaries, Teneriffe. *Exp.* 34–42 millim.

2066. Copicucullia naruenensis. (Plate XCVI. fig. 19.)

Cucullia naruenensis, Staud. Stett. ent. Zeit. 1879, p. 322; id. Cat. Lep. pal. p. 216.

Cucullia dimorpha, Alph. Iris, vi. p. 347 (1893); id. Rom. Mém. ix. p. 218, pl. 7. f. 8.

Cucullia dimorpha, Staud. Iris, ix. p. 268 (1896).

Head, thorax, and abdomen greyish white mixed with fuscous brown; frons with two black bars, vertex of head with one; tegulæ with slight line near base, a prominent black medial line followed by two slight lines and brown tips; metathoracic crest dark at tips; abdomen with the dorsal crests dark. Fore wing greyish white irrorated and suffused in parts with fuscous; the veins, submedian fold, and cell with dark streaks, the last forking at extremity; a prominent black streak below base of cell; subbasal line represented by two slight striæ from costa and one from cell; antemedial line very highly angled outwards in the

interspaces and inwards on the veins; reniform represented by slight brownish outlines to centre and circumference, with an ill-defined oblique striga from costa above it; postmedial line bent outwards below costa, then obsolete to submedian fold and angled outwards on vein 1 and forming a black streak on middle of inner margin; some black striæ on costa towards apex; an oblique series of short black streaks from termen below apex to above middle of vein 4 and another series from termen above vein 3, with a more prominent streak below vein 2 connected with the streak in submedian fold; a terminal series of slight black striæ; cilia whitish with a fuscous line through them. Hind wing ochreous whitish, the veins and terminal area suffused with fuscous; cilia white; the underside white with slight discoidal spot.

Ab. 1. *dimorpha*. Fore wing with more distinct dark markings. —Uliassutai.

Ab. 2. *eumorpha*. More ochreous white.—Kaschgar, Aksu.

Hab. S.E. Russia, Narün; W. Turkestan, Issyk Kul; E. Turkestan, Kaschgar, Ili, Lob Nor, 1 ♀; Mongolia, Uliassutai, Aksu, 2 ♂. *Exp.*, ♂ 42, ♀ 44 millim.

2067. **Copicucullia sublutea.** (Plate XCVI. fig. 20.)

Cucullia sublutea, Græs. Berl. ent. Zeit. 1892, p. 312; Püng. Iris, xiv. pl. ii. f. 7; Staud. Cat. Lep. pal. p. 216.

Head, thorax, and abdomen pale ochreous yellow; frons, vertex of head, tegulæ, and mesothorax with rufous bars; metathoracic crest tipped with rufous. Fore wing pale ochreous yellow; a rufous streak below base of cell; a rufous streak on inner margin from before middle to tornus; an oblique series of short rufous streaks from termen below apex to lower angle of cell and another series from termen below vein 4 to vein 1 beyond middle. Hind wing yellowish white, the terminal area suffused with rufous: the underside whiter.

Hab. E. Turkestan, Kaschgar, type † ♀ in Coll. Püngeler; Mongolia, W. Gobi Desert, 1 ♂. *Exp.* 34 millim.

Genus **CHELIGALEA**, nov.

Type, *C. scopariæ*.

Proboscis fully developed; palpi obliquely upturned, short, fringed with long hair; frons with slight rounded prominence with corneous plate below it; eyes large, rounded; antennæ almost simple; head and thorax clothed with hair and hair-like scales; tegulæ produced behind into a hood; metathorax with crest; tibiæ fringed with long hair, the fore tibiæ with small medial terminal claw covered by a tuft of hair; abdomen dorsally crested on basal segments. Fore wing long and narrow, the apex rather produced and the termen oblique, veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2068. Cheligalea scopariæ.

Cucullia scopariæ, Dorfm. Verh. zool.-bot. Wien, 1853, p. 413; Herr.-Schäff. Neue Schmett. p. 11, f. 75; Staud. Cat. Lep. pal. p. 217.

Head and thorax brown and grey; tegulæ with white medial band edged with black; metathoracic crests tipped with black: abdomen ochreous, the dorsal crests dark, the ventral surface

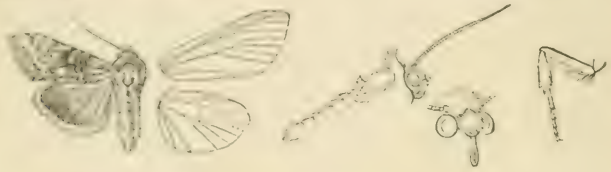


Fig. 5.—*Cheligalea scopariæ*, ♂. ½.

whitish. Fore wing pale brown; the basal costal area suffused with white: the subbasal line represented by dark striæ from costa and cell; antemedial line double, waved, strongly angled inwards on vein 1: the inner medial area suffused with white; orbicular and reniform with brown centres and white annuli defined by black, the former round, the latter with the annulus indistinct; a diffused black medial shade from costa to median nervure, then a slight waved line; postmedial line waved, bent outwards below costa and incurved below vein 4, with slight black streak beyond it above vein 4: subterminal line diffused whitish, angled outwards at vein 7 and middle with slight black streaks before it below costa and beyond it below vein 2; a terminal series of small black lunules with some whitish before them. Hind wing yellowish, the veins and terminal area suffused with brown.

Hab. Austria, Zeller, Frey and Leech Colls.; Hungary; Styria, Leech Coll.: S. Russia; Armenia; W. Siberia?; E. Siberia, Amurland, Crowley Coll. *Exp.* 32–40 millim.

Larva. Kirby, Butt. and Moths Eur. p. 259.

Reddish brown or brownish green; dorsal line pale; oblique lateral pale red streaks; a broad white lateral fascia. Food-plant, *Artemisia scoparia*.

Genus CUCULLIA.

	Type.
Cucullia, Schrank, Faun. Boica, ii. (2) p. 157 (1802)	*artemisiæ*.
Endeuxia, Hübn. Verz. p. 245 (1827)	*asteris*.
Eucalimia, Hübn. Verz. p. 245 (1827)	*gnaphalii*.
Callasia, Hübn. Verz. p. 246 (1827)	*umbratica*.
Aegyritis, Hübn. Verz. p. 247 (1827)	*artemisiæ*.
Rinaora, Smith, Ent. News, iii. p. 253 (1892); id. Trans. Am. Ent. Soc. xx. p. 83 (1894)	*sirigata*.
Tribomophora, Hübn. Tent. ined.	*umbratica*.

Proboscis fully developed; palpi short, oblique, fringed with hair on both sides; frons with slight rounded prominence; eyes large, rounded; antennæ typically almost simple in both sexes; head and thorax clothed with hair and hair-like scales, the tegulæ produced behind to a hood, the metathorax with

double crest; tibiæ fringed with long hair on outer side; abdomen with dorsal crests on basal segments. Fore wing long and narrow, the apex produced, the termen oblique; veins 3 & 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from below angle of disco-cellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Rancora*). Antennæ of male strongly serrate, of female minutely serrate.

A. Thorax dorsally blackish; patagia broadly edged with black above ..... *strigata*.
B. Thorax dorsally dark brown; patagia narrowly edged with brown above ..... *serraticornis*.
C. Thorax dorsally grey ..... *brucei*.

2069. Cucullia strigata. (Plate XCVI. fig. 21.)

Rancora strigata, Smith, Ent. News, iii. p. 253, pl. x. f. 1 (1892); id. Trans. Am. Ent. Soc. xxi. p. 83; Dyar, Cat. Lep. N. Am. p. 173.

♂. Head and thorax grey mixed with grey-brown; tegulæ with black line near base, traces of a medial line and blackish tips; upper edge of patagia and dorsum of thorax blackish; abdomen dark brown slightly mixed with grey, the dorsal crests blackish. Fore wing dark purplish grey slightly suffused with fuscous; a black streak in submedian fold to the antemedial line which is indistinct, strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform very small, indistinctly and incompletely defined by black, the former rather elongate elliptical and connected with the antemedial line by slight streaks, the latter with minute black lunule beyond it; postmedial line represented by a series of indistinct, minute, dentate blackish marks connected by traces of a waved line, bent outwards below costa and oblique below vein 4; a black streak above basal part of vein 4 with oblique series of streaks from its extremity to termen below apex; a streak above extremity of vein 3 and oblique streak below vein 2, with traces of shorter streaks above and below it; a fine pale line at base of cilia. Hind wing white slightly irrorated with fuscous, the veins and terminal area suffused with fuscous; the underside with the costal and terminal areas irrorated with fuscous, a black streak in cell and small discoidal lunule.

Hab. Canada, Br. Columbia, Victoria; U.S.A., Washington, Almota (*Piper*), 1 ♂. *Exp.* 52 millim.

2070. Cucullia serraticornis.

Cucullia serraticornis, Lintn. Ent. Cont. iii. p. 174 (1874); Grote, Check-List, pl. i. f. 10; Smith, Cat. Noct. N. Am. p. 238.
Cucullia matricariæ, Behr. Streck. Lep. Rhop. & Het. p. 94 (1874).

♂. Head and thorax purplish grey mixed with dark brown; frons with black bar; tegulæ with black line near base, two dark medial lines and dark tips; dorsum of thorax and upper edge of

patagia dark brown; abdomen grey dorsally suffused with red-brown, the crests dark. Fore wing purplish grey slightly irrorated with brown; subbasal line represented by an oblique striga from costa; a fine black streak in submedian fold to the antemedial line which is indistinctly double and very strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform very small and indistinctly defined by dark scales; postmedial line somewhat dentate, bent outwards below costa and oblique below vein 4, with a distinct dentate dark mark on a whitish streak in submedian fold; a black streak above vein 4 to near termen where

Fig. 6.—*Cucullia serraticornis*, ♂. ½.

it is met by an oblique series of short streaks from termen below apex; short streaks above extremities of veins 3 and 2, and an oblique subterminal streak below vein 2 to a slight streak in submedian fold beyond the postmedial line; cilia intersected with fuscous. Hind wing white, the veins, costal and inner areas, and termen tinged with red-brown; the underside with the costal area irrorated with brown, a black streak on median nervure and small discoidal lunule.

♀. Fore wing suffused with brown; hind wing nearly uniformly suffused with reddish brown.

Hab. U.S.A., California, Sanzalito (*Behrens*), 3 ♂, 1 ♀. *Exp.*, ♂ 46, ♀ 50 millim.

2071. Cucullia brucei. (Plate XCVI. fig. 22.)

Bancora brucei, Smith, Can. Ent. xxxv. p. 136 (1903).

♀. Head and thorax purplish grey mixed with red-brown; tegulæ with black line near base, two slight medial lines and brown tips; patagia slightly edged with brown above; abdomen red-brown mixed with grey. Fore wing purplish grey, suffused and irrorated with dark brown; a prominent black streak in submedian fold to the antemedial line which is very indistinct, strongly angled outwards in the interspaces and inwards on the veins; faint traces of minute orbicular and reniform stigmata; postmedial line obsolete except below vein 2 where it is oblique and sinuous; a prominent black streak above basal half of vein 4 with slight streaks between it and termen below apex, slight streaks above extremities of veins 3, 2 and a prominent oblique streak below vein 2, dilated in submedian fold. Hind wing pale uniformly suffused and irrorated

with brown; cilia white; the underside grey strongly irrorated with brown, a black streak in cell connected with a black discoidal lunule.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♀. *Exp.* 52 millim.

Sect. II. Antennæ of male minutely serrate.

A. Fore wing grey suffused with brown..... *solidaginis.*
B. Fore wing with the ground-colour blue-grey ..... *albicinerea.*
C. Fore wing with the ground-colour yellowish white..... *albida.*

2072. Cucullia solidaginis. (Plate XCVI. fig. 23.)

Cucullia solidaginis, Behr. Streck. Lep. Rhop. & Het. p. 94 (1874); Smith, Cat. Noct. N. Am. p. 239.

Head and thorax purplish grey largely mixed with dark brown; frons with blackish bar; tegulæ with black line near base, two slight medial lines and dark tips; dorsum of thorax dark brown; abdomen dark brown slightly irrorated with grey. Fore wing purple-grey thickly irrorated and suffused with dark brown; the veins streaked with black; a black streak in submedian fold, prominent to the antemedial line which is strongly angled outwards in the interspaces, especially the submedian, and inwards on the veins; two slight streaks in end of cell; postmedial line obsolete to vein 2, then oblique and angled outwards on vein 1; a black streak above vein 4, with slight streaks between its extremity and termen below apex; slight streaks above extremities of veins 3 and 2 and an oblique streak below vein 2. Hind wing pale, almost wholly suffused with brown, the cilia white with slight brown line at base; the underside whitish irrorated with brown, a black streak in cell and slight discoidal lunule.

Hab. Canada, Br. Columbia, Osoyoos, 1 ♂; U.S.A., S. California, 1 ♀. *Exp.* 50 millim.

2073. Cucullia albicinerea.

Rancora albicinerea, Smith, Can. Ent. xxxv. p. 137 (1903).

Head and thorax bluish white mixed with brown; frons with blackish bar; tegulæ with black line near base, traces of two medial

Fig. 7.—*Cucullia albicinerea*, ♂. ½.

lines and blackish tips; dorsum of thorax blackish; abdomen dark brown irrorated with grey, or bluish white irrorated with brown,

the crests blackish. Fore wing bluish white irrorated and slightly suffused with fuscous; the veins streaked with black; a black streak in subbasalian fold, prominent to the antemedial line, which is angled outwards in the interspaces and inwards on the veins, very strongly in submedian interspace and on vein 1; two slight streaks in end of cell; postmedial line bent outwards below costa, then waved, obsolescent to vein 2, excurved to vein 4, then oblique; a black streak above vein 4, with others between its extremity and termen below apex; slight streaks above extremity of veins 3 and 2 and an oblique streak below vein 2; cilia chequered fuscous and white. Hind wing white, more or less completely irrorated with brown, the veins and terminal area suffused with brown; cilia white with a brown line near base; the underside with more or less developed black streak in cell and small discoidal lunule.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 2 ♀, Vancouver I. (*W. H. Danby*), 1 ♂; U.S.A., Colorado (*Cockerell*), 2 ♂. *Exp.* 50 millim.

*2074. Cucullia albida. (Plate XCVI. fig. 24.)

Cucullia albida, Smith, Trans. Am. Ent. Soc. xxi. p. 84, pl. iv. f. 9 (1894); Dyar, Cat. Lep. N. Am. p. 172.

♂. White with a faint yellowish tinge; palpi at sides and vertex of head fuscous; tegulæ with the base fuscous defined by a black line, a slight dark medial line, the tips rather broadly fuscous; thorax dorsally fuscous; abdomen with the dorsal crests fuscous. Fore wing with the veins blackish; the lines obsolete; a black streak below base of cell to an elongate clearer white mark representing the claviform; orbicular and reniform obsolete; a series of rather broad dark streaks in the interspaces of terminal area, the streak above vein 4 longest; cilia intersected with fuscous. Hind wing whitish with a faint fuscous tinge, the veins darker; cilia white; the underside white irrorated with grey, a black streak in cell extending nearly to the discoidal lunule.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 40 millim. This species is unknown to me, figured from a drawing from type in Coll. J. B. Smith.

Sect. III. Antennæ almost simple in both sexes.

A. Fore wing with silvery white markings.
  a. Fore wing with the reniform obliterated by a silvery-white patch ..... *magnifica*.
  b. Fore wing with the reniform not obliterated by a silvery-white patch ..... *jaxcousei*.
B. Fore wing without silvery-white markings.
  a. Fore wing without distinct dark fascia on middle of outer margin.
    a[1]. Fore wing with the orbicular and reniform more or less distinctly defined.
      a[2]. Fore wing with the reniform filled in with black ..... *spectabilis*.

b^2. Fore wing with the reniform not filled in with black.
  a^3. Fore wing with the postmedial line angled outwards at vein 5, then almost straight oblique ..... *albipennis.*
  b^3. Fore wing with the postmedial line irregular towards inner margin.
    a^4. Fore wing with distinct white annulus to reniform ..... *fuchsiana.*
    b^4. Fore wing without distinct white annulus to reniform.
      a^5. Fore wing with prominent subterminal black fasciæ above veins 6, 4, 1.
        a^6. Fore wing the orbicular and reniform connected by a white streak on median nervure ..... *mandschuriæ.*
        b^6. Fore wing with the orbicular and reniform not connected by a white streak on median nervure ..... *fraudatrix.*
      b^5. Fore wing without prominent subterminal black fasciæ above veins 6, 4, 1.
        a^6. Fore wing without dark medial shade.
          a^7. Fore wing with the orbicular rounded.
            a^8. Fore wing with the postmedial line double, entire ..... *leucopis.*
            b^8. Fore wing with the postmedial line single, obsolescent except below vein 2.
              a^9. Colour purplish grey.
                a^{10}. Fore wing with prominent black spot on postmedial line in submedian fold ..... *maculosa.*
                b^{10}. Fore wing without prominent black spot on postmedial line in submedian fold.
                  a^{11}. Fore wing with the basal streak traversing a whitish patch ... *mixta.*
                  b^{11}. Fore wing the basal streak not traversing a whitish patch ... *consimilis.*
              b^9. Colour grey suffused with red-brown.
                a^{10}. Fore wing with prominent black tooth on postmedial line in submedian fold ..... *brunnea.*
                b^{10}. Fore wing without prominent black tooth on postmedial line in submedian fold.
                  a^{11}. Fore wing with black patches in cell and on postmedial costal and inner areas ..... *græseri.*
                  b^{11}. Fore wing without black patches. *cineracea.*
          b^7. Fore wing with the orbicular oblique elliptical ..... *maracandica.*
          c^7. Fore wing with the orbicular erect elliptical.
            a^8. Fore wing without oblique series of black streaks from termen below apex to lower angle of cell.
              a^9. Fore wing without whitish patch at base of costal area ..... *artemisiæ.*
              b^9. Fore wing with whitish patch at base of costal area ..... *propinqua.*

b^8. Fore wing with oblique series of black streaks from termen below apex to lower angle of cell ..... *generosa.*

d^7. Fore wing with the orbicular elongate elliptical.

a^8. Fore wing with the ground-colour brownish grey.

a^9. Fore wing with the markings obsolescent, brown ..... *embolina.*

b^9. Fore wing with the markings strong, blackish ..... *umbristriga.*

b^8. Fore wing with the ground-colour blue-grey.

a^9. Fore wing with the ante- and post-medial lines double ..... *duplicata.*

b^9. Fore wing with the ante- and post-medial lines single ..... *santonici.*

b^6. Fore wing with dark medial shade.

a^7. Fore wing bright blue-grey ..... *alpheraci.*

b^7. Fore wing whitish.

a^8. Fore wing with the antemedial line not angled outwards in cell..... *formosa.*

b^8. Fore wing with the antemedial line angled outwards in cell..... *hemidiaphana.*

c^7. Fore wing purplish grey.

a^8. Fore wing with the antemedial line moderately angled outwards in the interspaces and inwards on the veins.

a^9. Fore wing with short black streak above vein 4..... *nigrifascia.*

b^9. Fore wing with the black streak above vein 4 extending to reniform. *retecta.*

b^8. Fore wing with the antemedial line very strongly angled outwards in the interspaces and inwards on the veins ..... *perforata.*

b^1. Fore wing with the orbicular and reniform defined by black points.

a^2. Fore wing with black points in orbicular and reniform... ..... *absinthii.*

b^2. Fore wing without black points in orbicular and reniform.

a^3. Fore wing more or less tinged with brown.

a^4. Hind wing white, the veins and terminal area tinged with brown.

a^5. Fore wing without oblique black streak above tornus.

a^6. Fore wing without black streak above median nervure and vein 4.

a^7. Fore wing with black shade from costa between the stigmata ..... *clausa.*

b^7. Fore wing without black shade from costa between the stigmata ..... *rufescens.*

b^6. Fore wing with black streak above median nervure and vein 4 ..... *perstriata.*

b^5. Fore wing with slight oblique black streak below extremity of vein 2.

a^6. Fore wing elongate, narrow.

a^7. Fore wing purplish grey tinged with brown ..... *umbratica.*

b^7. Fore wing ash-grey tinged with blue. *clarior.*

b^6. Fore wing shorter and comparatively broader.
a^7. Fore wing pale, the costal area slightly tinged with brown ..... *anthemidis.*
b^7. Fore wing darker, the costal area strongly tinged with brown ..... *linosyridis.*
c^5. Fore wing with prominent oblique black streak above tornus ..... *extricata.*
b^4. Hind wing wholly suffused with brown.
a^5. Fore wing with the base of cilia not intersected with black streaks.
a^6. Fore wing with the cell and area beyond it strongly tinged with rufous. *virgaureæ.*
b^6. Fore wing without rufous tinge in and beyond cell..... *distinguenda.*
b^5. Fore wing with the base of cilia intersected by black streaks .. .. *chamomillæ.*
b^3. Fore wing blue-grey not tinged with brown. *terrensis.*
c^3. Fore wing grey-white suffused with fuscous. *dentilinea.*
c^1. Fore wing with the orbicular and reniform almost obsolete.
a^2. Hind wing in male white, the veins and terminal area tinged with fuscous.
a^3. Fore wing bluish grey.
a^4. Fore wing with some white above the oblique black streak above tornus.
a^5. Fore wing with hardly a trace of medial line .... *boryphora.*
b^5. Fore wing with fairly distinct medial line ..... *achilleæ.*
b^4. Fore wing without white above the oblique streak above tornus.
a^5. Thorax with the dorsum grey.
a^6. Fore wing with prominent elongate black streak below end of cell ..... *tanaceti.*
b^6. Fore wing with indistinct short curved black streak below end of cell ..... *dorsalis.*
b^5. Thorax with the dorsum dark brown.
a^6. Fore wing with the angle of postmedial line in submedian fold bidentate, acute at tip..... *speyeri.*
b^6. Fore wing with the angle of postmedial line in submedian fold single, more rounded at tip ..... *lætifica.*
b^3. Fore wing tinged with brown.
a^4. Fore wing with black mark before the whitish mark above tornus ..... *huddhæ.*
b^4. Fore wing with rufous mark beyond the whitish mark above tornus ..... *phocylides.*
c^4. Fore wing with slight oblique black streak below extremity of vein 2.
a^5. Fore wing with oblique medial shade from costa to cell.
a^6. Fore wing not tinged with purple ... *fraterna.*
b^6. Fore wing strongly tinged with purple. *lactucæ.*
b^5. Fore wing without oblique medial shade from costa to cell.
a^6. Fore wing blue-grey suffused with fuscous brown..... *minuta.*
b^6. Fore wing purplish grey tinged with rufous..... *dracunculi.*

b^2. Hind wing white with large black discoidal lunule and broad black terminal band ..... *pullata.*
c^2. Hind wing of male wholly suffused with brown.
a^3. Fore wing with the base of cilia intersected with black streaks.
a^4. Fore wing with prominent oblique black streak below extremity of vein 2.
a^5. Fore wing tinged with purple ..... *santolinæ.*
b^5. Fore wing not tinged with purple ..... *tecca.*
b^4. Fore wing without black streak below extremity of vein 2 ..... *indiciensis.*
b^3. Fore wing with the base of cilia not intersected by black streaks.
a^5. Fore wing with pale yellowish suffusion in cell ..... *præcana.*
b^4. Fore wing without pale yellowish suffusion in cell.
a^5. Fore wing with the postmedial line strongly angled inwards in submedian fold.
a^6. Fore wing with the postmedial line not angled inwards to below antemedial line in submedian fold.
a^7. Fore wing with the angle of postmedial line in submedian fold not bidentate and with somewhat rounded curve ..... *campanula.*
b^7. Fore wing with the angle of postmedial line in submedian fold bidentate, acute.
a^8. Hind wing with the cilia brown at base ..... *lucifuga.*
b^8. Hind wing with the cilia wholly white.
a^9. Thorax with the dorsum brown ... *intermedia.*
b^9. Thorax with the dorsum grey..... *cinderella.*
b^6. Fore wing with the postmedial line angled inwards to below antemedial line in submedian fold ..... *grisescens.*
b^5. Fore wing with the postmedial line slightly angled inwards in submedian fold ..... *celsiæ.*
b. Fore wing with distinct dark fascia on middle of inner margin.
a^1. Fore wing with the orbicular and reniform more or less distinctly defined.
a^2. Fore wing with the orbicular elliptical.
a^3. Hind wing with the basal half whitish.
a^4. Fore wing with the postmedial line angled inwards in submedian fold ..... *xeranthemi.*
b^4. Fore wing with the postmedial line forming a whitish lunule defined on each side by brown in submedian interspace.
a^5. Fore wing with the basal area yellowish tinged with rufous ..... *montana.*
b^5. Fore wing with the basal area concolorous.
a^6. Fore wing with the costal area not, or hardly, tinged with rufous.

a^7. Hind wing with the basal area slightly tinged with ochreous..... *florea.*
b^7. Hind wing with the basal area white or tinged with brown ..... *elongata.*
b^6. Fore wing with the costal area to median nervure strongly tinged with rufous..... *asteris.*
b^3. Hind wing wholly suffused with brown ... *gnaphalii.*
b^2. Fore wing with the orbicular small, round.
a^3. Fore wing with the area beyond the cell not tinged with rufous ..... *brevipennis.*
b^3. Fore wing with the area beyond the cell tinged with rufous.
a^4. Fore wing with oblique black streak in cell before the orbicular ..... *lilacina.*
b^4. Fore wing without oblique black streak in cell before the orbicular ..... *aqua.*
c^2. Fore wing with the orbicular absent ..... *bistriga.*
b^1. Fore wing with the orbicular and reniform defined by dark points.
a^2. Fore wing with the postmedial line forming a pale lunule defined on each side by fuscous in submedian interspace, then retracted to antemedial line.
a^3. Fore wing without whitish streak from costa at or beyond middle to termen below apex.
a^4. Hind wing white, the veins and terminal area suffused with brown..... *asteroides.*
b^4. Hind wing with the basal area whitish tinged with brown.
a^5. Fore wing with the costal area suffused with brown.
a^6. Fore wing with the streak below extremity of vein 2 almost reaching postmedial line ..... *postera.*
b^6. Fore wing with the streak below extremity of vein 2 well separated from postmedial line..... *ledereri.*
b^5. Fore wing with the costal area not suffused with brown.
a^6. Fore wing without black points in orbicular and reniform.
a^7. Fore wing with the markings almost obsolete..... *indicta.*
b^7. Fore wing with the markings fairly distinct..... *obscurior.*
b^6. Fore wing with black points in orbicular and reniform ..... *similaris.*
b^3. Fore wing with whitish streak from costa at or beyond middle to termen below apex.
a^4. Abdomen with the dorsal crests small, black.
a^5. Fore wing with the whitish streak across apical area arising from middle of costa..... *arizona.*
b^5. Fore wing with the whitish streak across apical area arising from well beyond middle of costa ..... *perstrigata.*

b^4. Abdomen with the dorsal crests large, thick, rufous ..... *convexipennis.*

b^3. Fore wing with the postmedial line forming a pale lunule defined on each side by fuscous in submedian interspace, then a smaller lunule above inner margin.

a^3. Fore wing with grey suffusion on the dark costal area.

a^4. Hind wing nearly evenly suffused with brown.

a^5. Fore wing with slight dark streaks between orbicular and reniform ..... *stigmatophora.*

b^5. Fore wing without dark streaks between orbicular and reniform.

a^6. Fore wing with white suffusion in submedian interspace before postmedial line ..... *scrophulariphaga.*

b^6. Fore wing with white patch in submedian interspace before postmedial line ..... *scrophulariphila.*

b^4. Hind wing white, the veins and terminal area suffused with brown.

a^5. Fore wing with the ground-colour grey slightly tinged with ochreous ..... *blattariæ.*

b^5. Fore wing with the ground-colour ochreous suffused with whitish ..... *thapsiphaga.*

c^5 Fore wing with the ground-colour white slightly tinged with ochreous in and beyond cell ..... *anceps.*

d^5. Fore wing with the ground-colour ochreous with hardly any whitish suffusion.

a^6. Fore wing rather browner..... *lychnitis.*

b^6. Fore wing more ochreous ..... *scrophulariæ.*

b^3. Fore wing without grey suffusion on the dark costal area.

a^4. Fore wing with the cilia strongly dentate, the postmedial line with the lunule above inner margin shallow ..... *verbasci.*

b^4. Fore wing with the cilia slightly dentate, the postmedial line with the lunule above inner margin deeper ..... *prenanthis.*

c^3. Fore wing with the orbicular and reniform absent ..... *oribac.*

2075. Cucullia magnifica.

Noctua magnifica, Frr. Beitr. iv. pl. 304. f. 3 (1839); Dup. Lép. Fr., Suppl. iii. p. 430, pl. 38. f. 2; Herr.-Schäff. Eur. Schmett., Noct. ii. p. 308, f. 191; Staud. Cat. Lep. pal. p. 217.
Cucullia scopula, F. de Waldheim, Bull. Mosc. 1839, i. p. 115, pl. 4. f. 1.

Head brown mixed with some white; thorax pure white, tegulæ brown at base, the hood and metathoracic crests tipped with brown; legs tinged with brown; abdomen white tinged with ochreous or brown, the dorsal crests tipped with brown. Fore wing silvery white, the base, inner margin, and costa from antemedial line to near apex white, more or less tinged with brown; a double waved

brown subbasal line from costa to submedian fold ; a double, somewhat waved olive-brown antemedial line, incurved from below costa to vein 1, then strongly angled outwards ; a brown and whitish medial band, edged by brown lines in cell, angled outwards to lower angle of cell, then with waved brown line on its inner side and the postmedial line on outer represented by a brown mark below costa, a point below vein 4 and a double irregularly-waved line filled in with white from vein 3 to inner margin ; a terminal series of black points and more prominent spot below vein 2. Hind wing white, with some small dark lunules on termen from apex to vein 2.

Hab. Austria ; S. Russia, Sarepta, Zeller and Leech Colls., Urals; W. Turkestan, Issyk Kul, Tarbagatai. *Exp.* 44–48 millim.

2076. Cucullia jancousci.

Cucullia jankowskii, Oberth. Ét. Ent. x. p. 23, pl. 3. f. 2 (1884); Staud. Cat. Lep. pal. p. 217.

Head brown mixed with some white ; thorax white tinged with brown, the base of tegulæ and metathoracic crests at tips dark brown ; abdomen white dorsally tinged with ochreous, the crests tipped with brown. Fore wing white, more or less completely suffused with brown ; subbasal line represented by a blackish striga below the cell ; antemedial line indistinctly double, brown filled in with white, irregularly waved and prominently defined by black on outer side from subcostal nervure to vein 1 ; a large silvery-white patch in and below cell, defined on outer side in cell by two black points ; reniform large, with brown centre and white annulus defined by black, slightly angled inwards on median nervure and with some blackish suffusion beyond it ; postmedial line indistinctly double, the inner line prominent, bent outwards below costa, angled inwards in discal fold, oblique and waved below vein 4, some white points on costa beyond it ; a diffused oblique white subterminal line, slightly angled inwards in discal and submedian folds ; a minutely waved white terminal band with series of small black lunules on it. Hind wing white, the terminal area suffused with fuscous brown ; the underside with the costal area tinged with brown.

Hab. E. Siberia, Amurland, 3 ♂, 1 ♀, Leech and Crowley Colls., Ussuri. *Exp.* 36–40 millim.

2077. Cucullia spectabilis.

Noctua spectabilis, Hübn. Eur. Schmett., Noct. f. 557 (1827); Dup. Lép. Fr. viii. p. 413, pl. 125. f. 5 ; Herr.-Schäff. Schmett. Eur. ii. p. 307, Noct. f. 193 ; Staud. Cat. Lep. pal. p. 217.

Head and thorax clothed with brown and grey hair ; tegulæ with blackish medial line ; abdomen brown and grey, the dorsal crests darker. Fore wing ochreous, brown, and fuscous mixed, the inner medial and postmedial areas grey suffused with white ; subbasal

line indistinct, slightly defined by whitish on outer side, waved, from costa to submedian fold; antemedial line double filled in with whitish, angled outwards below costa, then waved; claviform represented by a slight dark mark with some whitish suffusion beyond it; orbicular and reniform with white annuli incompletely defined by brown, the former with pale brown centre, somewhat oblique elliptical, the latter with dark centre, somewhat angled inwards on median nervure; a slight waved medial line; postmedial line double, somewhat dentate, bent outwards below costa and incurved below vein 4, the costa beyond it dark with white points; subterminal line white, diffused, somewhat excurved at middle, usually with some blackish points beyond it; a terminal series of black striæ with slight whitish line before them; cilia intersected with white. Hind wing whitish tinged with brown, the veins and terminal area brown; cilia whitish; the underside whitish irrorated with brown, the terminal area suffused with brown, a brown discoidal lunule.

Hab. S. Russia, Zeller and Leech Colls.; Armenia; W. Turkestan, Ala Tau, Issyk Kul; W. Siberia, Altai. *Exp.* 38 millim.

Larva. Pale ochreous, the dorsal area irrorated and striated with brown, leaving the dorsal, subdorsal, and lateral lines pale, the spiracular line darker; head red-brown.

2078. Cucullia albipennis. (Plate XCVI. fig. 25.)

Cucullia albipennis, Hmpsn. Moths Ind. ii. p. 239 (1894).

Head and thorax white mixed with brown; tegulæ with black medial line; patagia with some black near upper edge; abdomen whitish tinged with ochreous brown. Fore wing whitish suffused with brown; a white fascia below base of cell, with a black streak in submedian fold; subbasal line black, somewhat dentate, from cell to submedian fold; antemedial line double, the outer prominent, black, oblique from costal to submedian fold, where it is angled outwards, then inwards on vein 1; claviform small, obscurely defined by brown and with a white patch beyond it; orbicular and reniform with brown centres and white annuli defined by black, the former oblique elliptical, open above and below, the latter with white at sides only and angled inwards on median nervure; postmedial line black defined by white on outer side, bent outwards below costa, oblique to vein 4, then inwardly oblique, some white points beyond it on costa; subterminal line diffused, white with slight black streaks before it below costa and beyond it above vein 4 and below 2, running obliquely to near apex and angled outwards at vein 4; the extremity of veins defined by dentate white marks; a series of black points on termen. Hind wing white, the veins, inner and terminal areas suffused with brown; the underside white, with curved postmedial brown line and diffused terminal band.

Hab. Punjab, Simla (*Pilcher*), 1 ♂, 1 ♀, Kulu, Sultanpur (*G. Young*), 2 ♂, 2 ♀ type. *Exp.* 32–38 millim.

2079. Cucullia fuchsiana.

Cucullia fuchsiana, Ev. Bull. Mosc. 1842, iii. p. 552, pl. 5. f. 6; Dup. Lép. Fr., Suppl. iv. p. 229, pl. 70. f. 2; Herr.-Schäff. Eur. Schmett. ii. p. 308, Noct. f. 192; Staud. Cat. Lep. pal. p. 217.

Head and thorax white mixed with brown; tegulæ with dark medial line; abdomen whitish dorsally tinged with ochreous. Fore wing whitish suffused with brown; a white fascia below basal half of cell with a black streak in base of submedian fold; subbasal line represented by a black point below costa; antemedial line diffused, dentate; claviform large, defined by black, a white patch beyond its extremity; orbicular and reniform with brown centres and white annuli defined by black, the former rather irregularly rounded, the latter with its lower extremity produced; postmedial line obsolete on costal area, oblique, waved from reniform to inner margin; subterminal line diffused, white with slight black streaks before it below costa and beyond it above vein 4 and below 2, running obliquely to apex and interrupted at vein 5 by an oblique brown shade from termen below apex; a terminal black line towards tornus preceded by some white. Hind wing white, the veins and terminal area suffused with brown; the underside with slight discoidal spot.

Hab. Russia, Urals, 1 ♂, Zeller Coll.; W. Siberia, Altai; Tibet, Kuku-noor; E. Siberia, Ussuri. *Exp.* 34 millim.

2080. Cucullia mandschuriæ.

Cucullia mandschuriæ, Oberth. Ét. Ent. x. p. 23, pl. 3. f. 4 (1884); Staud. Cat. Lep. pal. p. 217.

Head and thorax purplish grey mixed with red-brown; tegulæ with indistinct brown lines near base and at middle; abdomen grey tinged with brown. Fore wing purplish grey irrorated with red-brown, the end of cell and postmedial area suffused with red-brown; a prominent black streak below base of cell; antemedial line very indistinct, strongly angled outwards in the interspaces and inwards on the veins; orbicular represented by a brown mark with curved white mark forming its upper edge and a white streak below it connected with the reniform, which has a dark brown centre and very incomplete whitish annulus slightly defined by brown; an oblique brown line from lower angle of cell to inner margin; postmedial line very indistinct, whitish, slightly angled outwards below costa and at veins 5 and 1; subterminal line whitish, defined on costal area by a dark shade on its inner side with pale points on costa and slightly by brown on outer side, slightly angled outwards at veins 7 and 5, with short black streaks before it above vein 6 and beyond it above 4 and below 2; a fine dark terminal line; cilia brown. Hind wing ochreous white, the terminal area suffused with brown; cilia white; the underside with the basal half whiter, a small discoidal spot.

Hab. E. Siberia, Ussuri, Sidemi, 1 ♂, 1 ♀. *Exp.* 42 millim.

2081. Cucullia fraudatrix.

Cucullia fraudatrix, Ev. Bull. Mosc. 1837, vi. p. 43; Frr. Beitr. v. pl. 388. f. 3; Staud. Cat. Lep. pal. p. 217.
Cucullia pontica, Boisd. Ind. Meth. p. 153 (1840).
Cucullia pyrethri, Herr.-Schäff. Schmett. Eur. ii. p. 310, Noct. f. 183 (1845).

Head and thorax clothed with grey and brown hair; tegulæ with dark medial line and tips; abdomen greyish tinged with brown. Fore wing grey-brown, the base of costal area suffused with whitish; a black streak below base of cell; antemedial line black defined by whitish on inner side, oblique from costa to submedian fold, then acutely angled inwards on vein 1, some white suffusion beyond it running obliquely from costa to submedian fold and embracing the orbicular which is oblique quadrate defined by black at sides; an oblique blackish shade from costa before the reniform, which is very large, whitish slightly defined by brown, its lower extremity angled outwards; postmedial line indistinct, oblique, waved, from reniform to submedian fold, obsolete towards costa; subterminal line diffused whitish, angled outwards at vein 7 and middle, with prominent black streaks before it below costa and crossing it above vein 4 and below 2; a fine dark terminal line with some whitish before it. Hind wing whitish, the veins and terminal area suffused with brown; the underside white, the costal area irrorated with brown, the terminal area suffused with brown.

Hab. Germany, Zeller and Leech Colls.; Hungary; Russia, Livonia, Ukraine (*Dowler*); Galitzia; Rumelia; W. Turkestan, Issyk Kul; W. Siberia, Altai; E. Turkestan, Ili; E. Siberia, Amurland, Ussuri. *Exp.* 38–40 millim.

Larva. Greyish irrorated and striated with brown; subdorsal brown stripes; a lateral series of oblique brown stripes on abdominal somites; a fine waved brown sublateral line; head with the hemispheres marbled with red-brown. Food-plant, *Artemisia*.

2082. Cucullia leucopis, n. sp. (Plate XCVI. fig. 26.)

♀. Head and thorax violaceous grey mixed with fuscous; frons with black bar above; tegulæ with black line near base and slight medial line; abdomen whitish tinged with brown and irrorated with fuscous, the dorsal crests black-tipped. Fore wing violaceous grey slightly irrorated with black; subbasal line double, waved, from costa to submedian fold; antemedial line strong, double, waved; claviform defined by black at extremity; orbicular and reniform pale grey defined by black, the former with central dark point, round, incompletely defined above and below, the latter with two dark points in centre; a waved medial line from cell to inner margin; postmedial line double, waved, bent outwards below costa and oblique below vein 4, some pale points beyond it on costa; subterminal line indistinct, grey, irregular, with small dentate black marks before it below costa and beyond it above and below veins 5

and 2 ; a terminal series of small black lunules. Hind wing white, the veins and terminal area fuscous ; cilia white.

Hab. Cape Colony, Grahamstown (*Tuck*), 1 ♀ type. *Exp.* 36 millim.

2083. Cucullia maculosa.

Cucullia maculosa, Staud. Stett. ent. Zeit. 1888, p. 259 ; id. Rom. Mém. vi. p. 526, pl. 10. f. 4 ; id. Cat. Lep. pal. p. 217.

♀. Head and thorax purplish grey mixed with brown ; frons with blackish bar ; tegulæ with blackish line near base and two slight medial lines ; tarsi fuscous with pale rings ; abdomen grey tinged with brown. Fore wing purplish grey ; subbasal line represented by an oblique striga from costa ; a fine dark streak in submedian fold to the antemedial line, which is diffused towards costa and slightly angled outwards below costa and in cell, then fine and very strongly angled outwards in submedian fold and inwards on vein 1 ; orbicular and reniform with brownish centres and indistinct grey annuli defined by fuscous, the former rounded, the latter with two dark points in its lower part ; postmedial line very indistinct, with some fuscous before it below costa and a prominent black spot in submedian fold, then angled outwards on vein 1, some pale points beyond it on costa ; the veins of terminal area slightly streaked with black ; a slight subterminal black streak above vein 4 and streak below vein 2 extending to termen, on brownish spots ; a terminal series of black striæ. Hind wing ochreous white, the veins and terminal third suffused with fuscous ; the underside with the costal area suffused with fuscous.

Hab. E. Siberia, Ussuri, Raddefka, 1 ♀. *Exp.* 44 millim.

*2084. Cucullia mixta.

Noctua mixta, Frr. Neue Beitr. iv. pl. 352. f. 3 (1842) ; Staud. Cat. Lep. pal. p. 215.

Cucullia consors, Ev. Bull. Mosc. 1846, iii. p. 88, pl. 2. f. 4, & 1857, i. p. 64.

♂. Head and thorax grey-white, the vertex of thorax suffused with dark brown ; frons at middle and above and vertex of head with blackish bars ; tegulæ with black line near base, two slight brown medial lines and dark brown tips ; patagia with some black scales near upper edge and edged with brown ; abdomen grey mixed with brown, the dorsal crests dark at tips. Fore wing grey-white suffused with brown, the veins with slight dark streaks ; a fine black streak in submedian fold to below origin of vein 2 traversing a whitish fascia ; subbasal line represented by two minute black streaks below costa ; antemedial line indistinct, double, strongly angled outwards in the interspaces and inwards on the veins ; claviform very faintly defined by whitish ; orbicular and reniform rather small, with rufous centres and whitish annuli incompletely defined by black, the former irregularly rounded, the latter with

some whitish on discocellulars; postmedial line obsolescent except below vein 2, where it is defined by whitish on outer side, bent outwards below costa, then with some white and black points on the veins, angled inwards in submedian fold and outwards on vein 1, some pale points beyond it on costa; a series of slight diffused brown streaks running obliquely from termen below apex to above vein 4, and slight subterminal streaks from above vein 3 to a blackish spot above tornus; a terminal series of minute black lunules; cilia pale brown with a fine white line through them. Hind wing whitish tinged or suffused with reddish brown, the veins and terminal area darker; cilia white slightly tinged with brown at base; the underside white irrorated with brown, a more or less distinct dark discoidal lunule.

Hab. ? Hungary; S. Russia, Sarepta, Ural Mts.; W. Turkestan, Issyk Kul; E. Turkestan, Ili. *Exp.* 42 millim.

2085. Cucullia consimilis.

Cucullia consimilis, Feld. Reis. Nov. pl. 108. f. 52 (1874).
Cucullia pusilla, Möschl. Verh. z.-b. Ges. Wien, xxxiii. p. 296, pl. xvi. f. 10 (1884).

Head and thorax grey-white mixed with dark brown; tegulæ with black line near base and two dark medial lines; tarsi with pale rings; abdomen whitish suffused and irrorated with yellow-brown, the dorsal crests blackish. Fore wing grey-white suffused and irrorated with dark brown; the veins with fine dark streaks; subbasal line represented by dark striæ from costa and cell; a slight dark streak in base of submedian fold; antemedial line double filled in with whitish, the outer line strong, dentate, and strongly angled inwards on the veins; claviform moderate, incompletely defined by black; orbicular and reniform whitish defined by black, their centres suffused with red-brown, the former round; postmedial line obsolete except at costa and below vein 2, where it is angled inwards in submedian fold and to inner margin; costa towards apex black with pale points on it; subterminal line only defined by a series of short black streaks before it below costa and beyond it below vein 6; a terminal series of small black lunules. Hind wing yellowish white, the veins and terminal area suffused with fuscous brown; the underside with the costal area irrorated with brown.

Hab. Orange R. Colony, Bloemfontein (*Eckersley*), 1 ♀; Cape Colony, Annshaw (*Miss F. Barrett*), 1 ♀, Grahamstown, 1 ♀, Knysna (*Trimen*), Rosmead, 2 ♂, Concordia (*Alston*), 1 ♂. *Exp.* 30–38 millim.

2086. Cucullia brunnea. (Plate XCVI. fig. 27.)

Cucullia brunnea, Hmpsn. Ann. S. Afr. Mus. ii. p. 277 (1902).

Head and thorax brown mixed with grey; tegulæ with dark line

near base; tarsi with pale rings; abdomen pale red-brown. Fore wing red-brown suffused with grey; subbasal line represented by some dark scales below costa and cell; antemedial line indistinct, double, dentate, very strongly angled outwards in submedian fold and inwards on vein 1; orbicular and reniform small, approximated, with brown centres and grey annuli defined by black, the former round; postmedial line hardly traceable except in submedian interspace, where it is represented by a dark angulate mark with a diffused pale patch before it; subterminal line represented by some obscure pale and brown streaks in the interspaces and by a curved blackish mark in submedian interspace defined by whitish on inner side; some blackish striæ on termen. Hind wing with the basal half pale tinged with yellow-brown, the terminal half deep red-brown; cilia white with a brown line at base.

Hab. Cape Colony, Bedford (*Mansel Weale*), 1 ♂, Deelfontein (*Sloggett*), 1 ♀. *Exp.* 36 millim. Type † in Coll. Druce.

2087. Cucullia græseri. (Plate XCVI. fig. 28.)

Cucullia græseri, Püng. Iris, xiv. p. 186, pl. iii. f. 9 (1901).

Head and thorax whitish suffused with red-brown; frons with blackish bars at middle and above; tegulæ with blackish medial line and slight line near tips; metathorax with four small blackish spots; tibiæ with slight blackish streaks; abdomen whitish suffused with red-brown, the dorsal crests blackish at tips. Fore wing whitish suffused with red-brown, the veins with slight dark streaks; subbasal line represented by an oblique black striga from costa; antemedial line double, oblique and forming diffused black spots towards costa, angled inwards on median nervure and vein 1, outwards in submedian fold and above inner margin, obsolescent below submedian fold; claviform slightly defined by brown, elongate and extending to postmedial line; orbicular and reniform with reddish-brown centres and yellowish-white annuli defined by black, the former irregularly rounded, open above; postmedial line double and forming diffused black spots towards costa and inner margin, obsolescent between those points, oblique below vein 5, slightly angled inwards in submedian fold and outwards on vein 1, some whitish and black spots beyond it on costa; a series of slight diffused brown streaks running obliquely from termen below apex to above vein 4 and slight diffused brown marks before termen above and below vein 2; a terminal series of small somewhat dentate black spots; cilia whitish at base, pale brown at tips. Hind wing pale, nearly uniformly suffused with reddish brown, the inner area rather paler; cilia yellowish white; the underside white tinged with brown, traces of a discoidal lunule and curved postmedial line.

Hab. Mongolia, Aksu, 1 ♂, type † ♂, ♀ in Coll. Püngeler. *Exp.*, ♂ 42, ♀ 44 millim.

2088. Cucullia cineracea.

Xestia cineracea, Frr. Neue Beitr. iv. p. 110, pl. 352. f. 2 (1841); Herr.-Schäff. Ex. Schmett. Noct. f. 196; Mill. Ann. Soc. Ent. Fr. 1885, p. 119, pl. 2. f. 11; Staud. Cat. Lep. pal. p. 215.
Cucullia mixta, Ev. Faun. Volg. Ur. p. 307 (nec Frr.).
Cucullia defecta, Staud. Iris, x. p. 338, pl. 9. f. 27 (1897).

♂. Head and thorax grey irrorated with fuscous and tinged with pale red brown; tegulæ with black medial line; abdomen yellow-brown, the anal tuft greyish, the ventral surface whitish. Fore wing grey irrorated with black and tinged with pale red-brown, the veins with fine black streaks; a slight black streak in submedian fold to the antemedial line; subbasal line represented by double striæ from costa; antemedial line double, excurved in interspaces and strongly dentate inwards on the veins; claviform slightly defined by black, elongate and extending to postmedial line; orbicular and reniform defined by black and with some black points in centres, the former irregularly rounded; postmedial line dentate, obsolescent except below vein 2, where it is double and strongly angled inwards in submedian fold; subterminal line represented by an obscure series of small dentate dark marks; a terminal series of black points. Hind wing white, tinged with reddish brown, the veins and terminal area suffused with brown; cilia white.

Ab. 1. *defecta*. Fore wing darker grey, the markings less distinct.—S.E. Siberia.

Hab. France, Alpes Maritimes; Russia, Urals, 1 ♂; W. Turkestan, Issyk Kul; E. Turkestan, Ili; Mongolia, Uliassutai. *Exp.* 44 millim.

2089. Cucullia maracandica.

Cucullia maracandica, Staud. Stett. ent. Zeit. 1888, p. 39; id. Cat. Lep. pal. p. 215.
Cucullia herzi, Alph. Iris, vi. p. 347 (1893); id. Rom. Mém. ix. p. 217, pl. 7. f. 7.

♂. Head and thorax dark blue-grey irrorated with white; the palpi, sides of frons, back of head, base of tegulæ, and greater part of pectus and legs ochreous, the tegulæ with fine dark line before middle; the tarsi bluish grey with fine ochreous rings; abdomen ochreous tinged with fuscous on dorsum. Fore wing deep blue-grey irrorated with ochreous, the base suffused with ochreous; the antemedial line ochreous, angled inwards on the veins and outwards in the interspaces; orbicular and reniform moderate, defined by ochreous, the former oblique elliptical; postmedial line bent outwards below costa, then waved, excurved to vein 4, then oblique; subterminal line represented by traces of ochreous streaks; cilia ochreous with a dark line at base intersected by ochreous points. Hind wing ochreous suffused with fuscous, especially on terminal area; cilia whitish at base; the underside whitish, slightly irrorated with fuscous, especially on terminal area, a slight discoidal lunule.

Hab. W. Turkestan, Sarawschan; Mongolia, Aksu, 2 ♂. *Exp.* 50–58 millim.

2090. Cucullia artemisiæ.

Phalæna artemisiæ, Hüfn. Berl. Mag. iii. p. 292 (1767); Knoch, Beitr. ii. p. 47, pl. 2. f. 10; Esp. Schmett. iv. pl. 128. ff. 1–2; Staud. Cat. Lep. pal. p. 217.

Noctua abrotani, Schiff. Wien. Verz. p. 73 (1776); Fabr. Mant. Ins. ii. p. 166 (1787); Hübn. Eur. Schmett., Noct. f. 257; Dup. Lép. Fr. vii. p. 415, pl. 125. f. 6; Frr. Beitr. iv. pl. 320; Barrett, Lep. Brit. vi. p. 83, pl. 239. f. 4.

Cucullia lindei, Heyne, Soc. Ent. xiv. p. 105 (1899).

Head and thorax dark brown mixed with grey; tegulæ with black line near base followed by a grey band with fine dark line on it; abdomen ochreous grey, tinged with brown towards extremity, the dorsal crests brown. Fore wing grey-brown suffused in parts with grey; the veins and submedian fold with fine dark streaks; a small

Fig. 8.—*Cucullia artemisiæ*, ♂. ½.

whitish patch at base; subbasal line indistinct, waved, from costa to submedian fold; antemedial line highly waved, strongly angled inwards on vein 1; claviform represented by a diffused white patch; orbicular and reniform with brown centres and grey annuli defined by black, the former erect elliptical, the latter very slightly angled inwards on median nervure; an indistinct medial line oblique from costa to median nervure, then dentate; postmedial line dentate, double at costa, bent outwards below costa, incurved at discal fold to reniform, oblique below vein 4; subterminal line represented by diffused dentate brown marks, often with short black streaks on them at middle, defined on inner side by diffused grey, and interrupted by a diffused oblique grey fascia from apex; a terminal series of small black lunules. Hind wing yellowish white, the veins and terminal area suffused with brown.

Ab. 1. *lindei*. Much darker.—C. Russia.

Hab. ? Britain; France; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Spain, Aragon; N. Italy; Scandinavia; Russia, Livonia, Zeller Coll.; C. Russia, Urals (*Lederer*); Armenia; W. Siberia, Altai; E. Siberia, Amurland, Ussuri. *Exp.* 36–44 millim.

Larva. Barrett, Lep. Brit. vi. p. 85.

Green with darker segmental lines; dorsal line slender, white; each somite with 8 red tubercles, except the anal somite which has two; the 2nd and 3rd somites with yellowish points; lateral stripe broad, yellow, interrupted; spiracles white ringed with black; head

brown, blackish behind and with pale-edged frontal triangle; ventral surface pale green with two slender green lines which are red-brown on 3rd and 4th somites. Food-plants: *Artemisia campestris*, *abrotanum*, and *absynthium*.

Pupa. Yellowish with the front greenish.

2091. Cucullia propinqua.

Cucullia propinqua, Ev. Bull. Mosc. 1842, p. 553, pl. 5. f. 7; Frr. Beitr. vi. pl. 508. f. 2; Herr.-Schäff. Eur. Schmett. ii. p. 307, Noct. f. 187; Staud. Cat. Lep. pal. p. 217.

Head and thorax violaceous grey mixed with some black; frons and vertex of head with black bars; tegulæ with black medial line and rufous tips; metathoracic crest tipped with rufous; abdomen grey, the dorsal crests tipped with black, the ventral surface whitish, irrorated with brown. Fore wing violaceous grey suffused with fuscous and tinged in parts with rufous; the basal area whitish down to the slight dark streak in submedian fold; subbasal line represented by two black points on costa and one below costa; antemedial line double, strongly angled outwards in the interspaces and inwards on the veins, a violaceous-white patch beyond it between submedian fold and inner margin; orbicular with rufous centre with dark points on it and white annulus defined by black, erect elliptical; reniform reddish brown with ill-defined grey annulus; postmedial line double, bent outwards below costa, then waved, indistinct to vein 2, then prominent and white; subterminal line only defined by violaceous-white suffusion on its inner side and by short black streaks beyond it below veins 5 and 2; the veins slightly streaked with black towards termen; a terminal series of black striæ. Hind wing pale suffused with fuscous brown, the terminal area darker; cilia white; the underside paler with dark discoidal spot.

Hab. Russia, Urals; W. Siberia, Altai; Mongolia, Urga; E. Siberia, Dahuria, Kentei, 1 ♂, 1 ♀, Ussuri. *Exp.*, ♂ 36, ♀ 40 millim.

2092. Cucullia generosa. (Plate XCVI. fig. 29.)

Cucullia generosa, Staud. Stett. ent. Zeit. 1889, p. 51; id. Cat. Lep. pal. p. 216.

♂. Head and thorax grey-white; palpi at sides and lower part of frons red-brown; frons and vertex of head with blackish bars; tegulæ with black line near base, two slight medial lines and brown line near tips; patagia edged with red-brown, dorsum of thorax red-brown; tibiæ with black streaks; abdomen whitish tinged with red-brown. Fore wing pale greyish with a violaceous tinge, the costal area, cell, and an oblique shade from termen below apex to below end of cell reddish brown; a prominent black streak below base of cell; the veins finely streaked with black; antemedial line indistinct, angled outwards in the interspaces and inwards on the veins, very highly angled outwards in submedian fold and above

inner margin, where it forms a black streak connected with the postmedial line; orbicular and reniform with brownish centres and whitish annuli defined by black, the former erect elliptical, the latter with its outer side open above vein 5; postmedial line represented by an oblique striga from costa, obsolete to vein 2, then indistinct, angled inwards in submedian fold and outwards on vein 1, some pale points beyond it on costa; an oblique series of black streaks on a brown shade from termen below apex to lower angle of cell, an oblique streak below extremity of vein 2; a terminal series of black striæ; cilia pale rufous with a fine white line through them. Hind wing yellowish brown tinged with fuscous; cilia white; the underside whitish irrorated with brown; the veins brown, those bounding the cell darker, a dark streak in cell.

Hab. E. Turkestan, Kashgar, Kizil, 1 ♂. *Exp.* 46 millim.

*2093. Cucullia embolima. (Plate XCVI. fig. 30.)

Cucullia embolima, Püng. Iris, xix. p. 96 (1906).

Head and thorax pale grey-brown; vertex of head with some fuscous hair; tegulæ with black line near base; tibiæ with slight dark streaks; abdomen reddish brown, the base greyish, the dorsal crests blackish at tips. Fore wing brownish grey suffused with brown, the veins with slight dark streaks; a fine dark streak in basal half of submedian fold; subbasal line represented by a slight striga from costa; antemedial line indistinct, single, rather strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform indistinctly defined by brown, the former rather elongate elliptical, the latter somewhat angled inwards on median nervure; postmedial line indistinct, somewhat dentate, oblique from costa to vein 4, where it is angled outwards, then inwardly oblique and angled inwards in submedian fold; a slight dark streak above vein 4 beyond the cell; a short oblique dark streak below vein 4 towards termen; a terminal series of minute black lunules, the one above vein 3 sometimes forming a slight streak; cilia greyish with two slight brown lines through them. Hind wing uniform rather pale reddish brown; cilia whitish with a brown line through them; the underside pale tinged and finely irrorated with brown.

Hab. Tibet, Kuku-noor, type† ♂, ♀ in Coll. Püngeler. *Exp.*, ♂ 42, ♀ 44 millim.

*2094. Cucullia umbristiga.

Cucullia umbristiga, Alph. Hor. Soc. Ent. Ross. xxvi. p. 452 (1892); id. Rom. Mém. ix. p. 37, pl. 3. f. 7; Staud. Cat. Lep. pal. p. 216.

Head and thorax whitish suffused with red-brown; frons at middle and above and vertex of head with blackish bars; tegulæ with two black lines near base and two brown lines near tips; patagia with some black scales near upper edge; tibiæ with blackish streaks; abdomen grey-white suffused and irrorated with brown,

the dorsal crests dark at tips. Fore wing whitish suffused and irrorated with reddish brown, the veins with slight dark streaks: a black streak below basal half of cell; subbasal line represented by two oblique striæ from costa; antemedial line double, formed by short diffused streaks towards costa, strongly angled inwards on median nervure and vein 1 and outwards in submedian fold, slightly angled outwards above inner margin; claviform defined by black, elongate and extending to postmedial line with slight dark streak through centre; orbicular and reniform with some red-brown suffusion in centres and whitish annuli defined by black, the former oblique elliptical; postmedial line double towards costa, then obsolescent, stronger below vein 2, angled inwards in submedian fold, outwards above vein 1, then oblique to inner margin, some whitish points beyond it on costa; a series of black streaks in the interspaces running obliquely from termen below apex to above vein 4, slight streaks from termen above veins 3 and 2 and an oblique streak below vein 2 to a streak in submedian fold extending to postmedial line; a terminal series of black striæ; cilia brownish white with a fuscous line through them. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; the underside whitish, the costal and terminal areas irrorated with brown, a slight discoidal lunule.

Hab. E. Turkestan, Kashgar; Mongolia, Aksu; W. China.
Exp. 44–46 millim.

*2095. Cucullia duplicata. (Plate XCVI. fig. 31.)

Cucullia duplicata, Staud. Stett. ent. Zeit. 1882, p. 47; id. Cat. Lep. pal. p. 216.
Cucullia amœna, Staud. Iris, xii. p. 379, pl. 6. f. 17 (1899).

♂. Head and thorax blue-grey mixed with dark brown; frons at middle and above and vertex of head with black bars; tegulæ with black line near base, two slight medial lines and black tips; metathoracic crest with black spots; tibiæ with slight black streaks; abdomen grey-white irrorated with dark brown, the dorsal crests blackish. Fore wing bluish grey slightly irrorated with brown, the veins with slight dark streaks; a fine black streak below basal half of cell; subbasal line represented by two oblique striæ from costa, one in cell and one below cell; antemedial line double, formed by short rather diffused streaks from costa to median nervure, strongly angled outwards in submedian fold and inwards on vein 1, then slightly angled outwards above inner margin; claviform defined by black, elongate, extending to postmedial line and with slight dark streak through centre; orbicular and reniform with whitish annuli defined by black and some reddish-brown suffusion in centres, the former elongate elliptical; postmedial line double at costa and below vein 2, obsolescent between those points, slightly bent outwards below costa, angled outwards between veins 5, 4, inwards in submedian fold and outwards just above vein 1, then oblique to inner margin, some white and black striæ beyond it on costa, and a black streak in submedian fold from it to termen; subterminal line represented by a series of rather diffused short brown streaks running

obliquely from termen below apex to above vein 5, then subterminal, a terminal series of small wedge-shaped black spots; cilia pale brown with fine whitish line through them. Hind wing whitish tinged with brown, the veins and terminal area brown; cilia pure white; the underside white, the costal and terminal areas irrorated with brown, a slight discoidal lunule.

♀. Fore wing with the markings darker and stronger; hind wing browner.

Ab. *amœna*. Darker; fore wing brownish grey with the markings less distinct.—Mongolia.

Hab. W. Turkestan, Saisan, Ala Tau; E. Turkestan, Kashgar, Thian Shán, Korla; Mongolia, Uliassutai; Tibet, Kuku-noor. *Exp.*, ♂ 42, ♀ 46 millim.

2096. Cucullia santonici.

Noctua santonici, Hübn. Eur. Schmett., Noct. ff. 584, 585 (1827); Frr. Neue Beitr. iv. pl. 357; Dup. Lép. Fr. vii. p. 407, pl. 125. f. 2; id. Suppl. iii. p. 398, pl. 36. f. i.; Staud. Cat. Lep. pal. p. 216.
Cucullia odorata, Guen. Noct. ii. p. 139 (1852).

Head and thorax violaceous white mixed with dark brown; frons with black bar above; tegulæ with two black lines near base, two slight medial lines and brown tips; patagia with dark line near upper edge; metathoracic crest black-tipped; tibiæ with black streaks; abdomen whitish tinged with brown towards extremity, the dorsal crests dark. Fore wing violaceous white slightly irrorated with reddish brown; the veins with fine dark streaks; a black streak in base of submedian fold; subbasal line represented by an oblique striga from costa; antemedial line indistinctly double, strongly angled outwards in interspaces and very strongly inwards on median nervure and vein 1; claviform defined above by a slight dark streak, rarely completely defined; orbicular and reniform defined by black and with some brown in centres, the former round or somewhat elongate elliptical and touching antemedial line; medial line represented by an oblique dark shade from costa to reniform; postmedial line irregularly waved, obsolescent except towards costa and below vein 2, bent outwards below costa, oblique below vein 5 and strongly angled inwards in submedian fold, some white points beyond it on costa; an oblique series of four dark streaks from termen below apex, a short black streak above vein 4, and an oblique streak below vein 2 from termen to a black streak in submedian fold beyond postmedian line: a series of black striæ on termen. Hind wing white, the veins and terminal area suffused with reddish brown; the underside with the costal area irrorated with brown, a slight discoidal lunule.

Ab. 1. *odorata*. Larger, blue-grey; tegulæ with one black line at base.—Valais. Alpes Maritimes.

Hab. Switzerland, Valais, Frey Coll.; Italy, Alpes Maritimes; Corsica, Leech Coll.; S. Russia, Zeller, Frey, Leech, and Crowley Colls.; Armenia; ? Asia Minor, Pontus; W. Turkestan, Issyk Kul. *Exp.* 44–50 millim.

Larva. Kirby, Butt. & Moths Eur. p. 258.

White with a dorsal series of dull green angulate marks open above and adjoining faint red spots; lateral stripes dull green. Food-plants: Chamomile, *Artemisia*. 7.

*2097. Cucullia alpheraci.

Cucullia alpherakyi, Staud. Iris, ix. p. 371, pl. 4. f. 5 (1896); id. Cat. Lep. pal. p. 217.

Head and thorax blue-grey tinged with brown, the latter with black dorsal streak on metathorax; abdomen with the crests blackish. Fore wing bright blue-grey; a brown shade before the antemedial line from costa to vein 1; antemedial line double, oblique and slightly waved from costa to submedian fold, where it is acutely angled, then very oblique to inner margin; a slight black streak on middle of inner margin; claviform absent; orbicular and reniform with brownish centres and slight pale annuli defined by black, the former erect elliptical, rather narrow, the latter somewhat angled inwards on median nervure and with pale lunule in centre; a medial shade from costa to median nervure and a brown shade before the postmedial line, which is indistinct except below vein 2, bent outwards below costa, and forming a double lunule with pale centre in submedian interspace; short dark streaks in the interspaces of terminal area above veins 6 and 4 and below 2; a terminal series of slight black lunules; cilia greyish. Hind wing dark grey-brown, the basal half paler; the underside whitish, the costal area irrorated with brown, the veins and terminal area dark brown.

Hab. Mongolia, Urga. *Exp.* 38 millim. This species is unknown to me.

2098. Cucullia formosa.

Cucullia formosa, Rghfr. Verh. zool.-bot. Ges. Wien, 1860, p. 775; Friv. Jell. pl. 7. f. 4; Mill. Icones, ii. pl. 98. f. ii.; Staud. Cat. Lep. pal. p. 217.

Head and thorax violaceous grey mixed with fuscous; frons and vertex of head with black bars; tegulæ with black line near base and brown tips; metathoracic crests black; abdomen whitish irrorated with brown towards extremity, the dorsal crests black. Fore wing violaceous white slightly tinged in parts with brown; the subbasal line represented by an oblique striga from costa; a black streak below base of cell to the double irregular antemedial line, which is angled inwards on vein 1 and outwards above inner margin; orbicular and reniform with brown centres and whitish annuli defined by black, the former rather small, round, the latter incompletely defined; a strong black medial shade; postmedial line double, minutely waved, almost obsolete between veins 7 and 4, bent outwards below costa and incurved below vein 4, some grey points on costa beyond it; the veins of terminal area finely streaked with black, the interspaces with irregular brown streaks below

costa, at middle, and below vein 2; a terminal series of small black lunules. Hind wing white, the veins and termen slightly streaked with brown, more strongly in female.

Hab. France, Ardèche; Hungary, Zeller, Frey, and Leech Colls.; Tibet, Kuku-noor, Amdo. *Exp.* 34–44 millim.

Larva. Resembles that of *C. absinthii*. Food-plant, *Artemisia camphorata*.

2099. Cucullia hemidiaphana. (Plate XCVI. fig. 32.)

Cucullia hemidiaphana, Græs. Berl. ent. Zeit. 1892, p. 313; Staud. Cat. Lep. pal. p. 216.

Head and thorax whitish mixed with black-brown; frons and vertex of head with blackish bars; tibiæ slightly streaked with black; abdomen white slightly tinged with brown, the crests blackish at tips. Fore wing whitish slightly tinged with brown and sparsely irrorated with black; a fine black streak below base of cell; subbasal line represented by a slight oblique black striga from costa; antemedial line angled outwards in the interspaces, very strongly in submedian fold and inwards on the veins; orbicular and reniform small, with brownish centres and whitish annuli slightly defined by black, the former round; a blackish medial shade; postmedial line almost obsolete except below vein 2, where it is angled inwards in submedian fold and outwards on vein 1, some whitish points beyond it on costa; the veins of terminal area finely streaked with black; a slight oblique dark shade from termen below apex to lower angle of cell; an oblique subterminal black streak below vein 2; a terminal series of black striæ. Hind wing semihyaline white, the veins tinged with brown towards termen, in female the terminal area tinged with brown.

Hab. W. Turkestan, Turcomania, Askabad, 1 ♀, Alexander Mts. 1 ♂, Issyk Kul. *Exp.* 36–40 millim.

2100. Cucullia nigrifascia. (Plate XCVII. fig. 1.)

Cucullia nigrifascia, Hmpsn. Moths Ind. ii. p. 239 (1894).

Head and thorax grey mixed with fuscous and dark brown; frons with black bar above; tegulæ with black line near base and two light brown medial lines; tarsi banded with black; abdomen whitish, irrorated and dorsally tinged with brown. Fore wing violaceous grey irrorated and suffused with fuscous and the area from end of cell to termen tinged with reddish brown; the veins slightly streaked with black; a fine black streak below base of cell; subbasal line represented by an oblique striga from costa; antemedial line indistinctly double, the outer line strong, waved, strongly dentate inwards on vein 1 and outwards above inner margin; claviform obsolete; orbicular and reniform with brown centres and hardly defined white annuli, the cell before and between them black, the former round; a very strong black medial shade, obliquely waved

from costa to above vein 1, then angled inwards; postmedial line almost obsolete except at costa and inner margin, where it is defined by white on outer side, bent outwards below costa and incurved below vein 4, some white points beyond it on costa; a black streak above vein 6 and short subterminal streaks above 4 and below 2; a terminal series of slight black lunules. Hind wing white, the veins and terminal area suffused with brown.

Hab. Punjab, Murree (*Horne*), 2 ♂ type, Simla (*Pilcher*), 1 ♀. *Exp.* 44–50 millim.

2101. Cucullia retecta. (Plate XCVII. fig. 2.)

Cucullia retecta, Püng. Iris, xiv. p. 187, pl. ii. f. 10 (1901).

Head and thorax pale purplish grey mixed with fuscous brown; frons and vertex of head with black bars; tegulæ with prominent black line near base, two slight medial lines and dark tips; patagia with some black scales near upper edge which is brown; dorsum of thorax dark; metathoracic crest black; tarsi brown; abdomen ochraceous white, the dorsal crests black, the anal tuft grey. Fore wing pale purplish grey irrorated with brown, the veins with fine black streaks; a black streak below base of cell; antemedial line double, slightly angled outwards below costa, oblique to submedian fold, where it is angled, then angled inwards on vein 1; orbicular round with brown centre and whitish annulus defined by black; a prominent black medial shade, oblique from costa to vein 2, then approximated to the postmedial line: reniform rather indistinctly defined and with brownish lunule in centre; postmedial line obsolete except below vein 2, angled outwards on vein 1; some pale points on costa towards apex; a fine black streak above vein 4 from reniform to middle, where it is met by a slight dark shade from termen below apex; a prominent oblique black streak below extremity of vein 2; a terminal series of slight black lunules; cilia pale brown with a fine whitish line through them. Hind wing whitish tinged with ochreous especially on inner area, the terminal area suffused with brown; cilia white with brownish line at base; the underside whiter, the costal and terminal areas irrorated with brown, a slight discoidal point.

Hab. Tibet, Kuku-noor, 1 ♂, 1 ♀. *Exp.* 44 millim. Type † ♂, ♀ in Coll. Püngeler.

2102. Cucullia perforata.

Cucullia perforata, Brem. Lep. Ost-Sib. p. 54, pl. 5. f. 14 (1864); Oberth. Ét. Ent. x. p. 24, pl. 3. f. 1; Staud. Cat. Lep. pal. p. 217.

Head and thorax purplish grey mixed with dark brown; frons with black bar; tegulæ with black line near base and two fine medial brown lines; abdomen yellowish grey irrorated with brown, the dorsal crests dark. Fore wing violaceous grey irrorated and suffused with brown; subbasal line represented by two oblique black striæ from costa; a black streak below the cell to the double black ante-

medial line, which is very highly angled outwards in interspaces and inwards on the veins ; orbicular elliptical with red-brown centre and white annulus partially defined by black ; a white bar in cell before the reniform, which has a brown centre and greyish annulus incompletely defined by black ; an indistinct curved medial shade ; postmedial line indistinctly double filled in with grey, minutely waved, bent outwards below costa and incurved below vein 4 ; terminal area suffused with whitish, with dark streaks on the veins and short black streaks in the interspaces below costa above vein 4 and below 2 ; a terminal series of small black lunules. Hind wing yellowish white tinged with brown, the veins and terminal area suffused with brown ; the underside with slight discoidal spot.

Hab. E. Siberia, Ussuri ; Japan, Yesso (*Pryer*), 1 ♂, Hakodate (*Leech*), 1 ♀ ; Corea, Gensan (*Ito*), 1 ♀ ; N. China. *Exp.* 40 millim.

2103. Cucullia absinthii.

Noctua absinthii, Linn. Faun. Suec. p. 314 (1761) ; Clerck, Icones, pl. 8. f. 9 ; Esp. Schmett. iv. pl. 116. ff. 1–3 ; Hübn. Eur. Schmett., Noct. f. 258 ; Dup. Lép. Fr. vii. p. 418, pl. 125. f. 7 ; Frr. Beitr. iv. pl. 321 ; Steph. Ill. Brit. Ent., Haust. iii. p. 91 ; Staud. Cat. Lep. pal. p. 217.
Noctua punctigera, Hüfn. Berl. Mag. iii. p. 416 (1767).

Head and thorax violaceous grey mixed with brown ; palpi blackish at sides ; frons with black bars ; tegulæ with black line near base, two slight medial brown lines and brown tips ; patagia with some black scales near upper edge which is brown ; abdomen grey irrorated with brown, the dorsal crests black. Fore wing grey-white mostly suffused with brown ; the subbasal line represented by two black striæ from costa, a short streak in cell and striga from median nervure ; antemedial line double, diffused, irregularly waved, strongly angled inwards on vein 1 and outwards above inner margin ; claviform obsolete with diffused white patch beyond it ; orbicular with brown centre with two black spots on it and white annulus defined by black spots and forming a figure-of-8-shaped mark ; a black patch from costa to median nervure before the reniform, which has a brown centre with black spot on it above and two below and indistinct white annulus defined by black spots ; postmedial line double towards costa and inner margin and almost obsolete at middle, bent outwards below costa, excurved to vein 4, then incurved, the costa beyond it black with grey points on it ; the veins of terminal area with slight dark streaks, a black streak above vein 6 and spot below vein 2 ; the subterminal line represented by slight diffused brown and white streaks ; a terminal series of small black lunules. Hind wing white tinged with brown, the veins and terminal area suffused with brown ; cilia white ; the underside with the costal and terminal areas irrorated with brown, a discoidal point.

Hab. Britain, Leech Coll. ; France ; Germany, Zeller, Frey, and Leech Colls. ; Switzerland, Frey Coll. ; Italy ; Sweden ; Russia,

Livonia, Zeller Coll.; W. Turkestan, Issyk Kul; W. Siberia, Altai; E. Turkestan, Ili. *Exp.* 36–44 millim.

Larva. Meyr. Brit. Lep. p. 47; Barrett, Lep. Brit. vi. p. 82, pl. 239. f. 3.

Pale yellow-green dorsally suffused with purple-grey except at incisions; dorsal and subdorsal lines pale green; head and thoracic shield ochreous grey. Food plant, *Artemisia absinthium*. 8·9.

2104. **Cucullia clausa.** (Plate XCVII. fig. 3.)

Cucullia clausa, Wlk. xi. 657 (1857).

♂. Head, thorax, and abdomen grey mixed with brown; tegulæ with black line near base and two slight medial lines. Fore wing grey suffused with brown, leaving some whitish below base and extremity of cell and slight streaks in interspaces of terminal area; subbasal line represented by black points below costa and cell; antemedial line ill-defined, dentate, interrupted; orbicular and reniform whitish defined by black points on their edges and with a blackish patch between them from costa to median nervure; postmedial line obsolete except at costa and below vein 2, where it is oblique waved; subterminal line obsolete, a terminal series of small black spots. Hind wing whitish, the veins and terminal area suffused with brown.

Hab. Ignotus, 1 ♂, type. *Exp.* 32 millim. Probably from S. Africa.

2105. **Cucullia rufescens**, n. sp. (Plate XCVII. fig. 4.)

♂. Head and thorax grey tinged with brown; tegulæ with brown line near base, two slight medial lines and brown tips; patagia with some black scales near upper edge; abdomen ochreous white dorsally suffused with red-brown. Fore wing grey, irrorated and suffused with red-brown especially on basal and costal areas; subbasal line represented by two oblique striæ from costa; antemedial line double, dentate, highly angled outwards in submedian fold and above inner margin and inwards on vein 1; orbicular defined by four brown points and with its centre incompletely defined by brown; reniform with some brown points on its inner edge, its centre incompletely defined by brown; postmedial line indistinct and bent outwards below costa, below vein 4 represented by double points on the veins and below vein 2 by a double waved oblique line, some pale points beyond it on costa; the veins towards apex streaked with black; traces of an irregular subterminal line; a terminal series of small black lunules. Hind wing white, the veins and a terminal line brown.

Hab. Br. E. Africa, Eb Urru (*Betton*), 1 ♂ type. *Exp.* 42 millim.

2106. **Cucullia perstriata**, n. sp. (Plate XCVII. fig. 5.)

Head and thorax grey mixed with brown; frons with blackish bar; tegulæ with their bases brown bounded by a black line, two slight

medial lines and dark tips; tibiæ streaked with black; abdomen grey irrorated with brown and dorsally tinged with ochreous. Fore wing grey irrorated with fuscous and slightly tinged with brown; a more or less strongly developed black streak above median nervure and vein 4 from base to near termen; some very pale rufous in and beyond end of cell; traces of a black streak in base of submedian fold and of an antemedial line below the cell, where it is very strongly angled outwards; orbicular represented by two black points on its upper edge; reniform with two black points on its upper edge and a curved black line representing its lower edge; postmedial line represented by a very oblique indistinct black line in submedian interspace; a slight fuscous shade from termen below apex; a subterminal black spot in submedian fold; a terminal series of black striæ. Hind wing white, the veins of terminal half and termen brown.

Hab. Uganda, Entebbe (*Minchin*), 1 ♀; Cape Colony, Buntingville (*Miss F. Barrett*), 1 ♂ type, Transkei (*Miss F. Barrett*), 1 ♂. *Exp.* 46 millim.

2107. Cucullia umbratica.

Noctua umbratica, Linn. Syst. Nat. x. p. 515 (1758); Esp. Schmett. iv. pl. 137. f. 1; Hübn. Eur. Schmett., Noct. f. 263; Frr. Beitr. Eur. Schmett. v. pl. 447; Sepp, Ins. iii. pl. 25. f. 7; Dup. Lép. Fr. vii. p. 421, pl. 26. f. 1; Steph. Ill. Brit. Ent., Haust. iii. p. 87; Staud. Cat. Lep. pal. p. 216.
Noctua lucifuga, Esp. Schmett. iv. pl. 178. f. 6 (nec Schiff.).
Noctua lactucæ, Hübn. Eur. Schmett., Noct. f. 264; Steph. Ill. Brit. Ent., Haust. iii. p. 88 (nec Esp.).
Cucullia tanacceti, Steph. Ill. Brit. Ent., Haust. iii. p. 88 (nec Schiff.).
Cucullia sonchi, Hein. Schmett. Deutsch. i. p. 400 (1859).

Head and thorax purplish grey mixed with brown; frons with blackish bar; tegulæ with black line near base and two brown medial lines; tibiæ with dark streaks; abdomen ochreous greyish, dorsally suffused with brown, especially towards extremity, the crests dark. Fore wing purplish grey suffused with brown, the veins with dark slight streaks; subbasal line represented by a slight oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is highly angled outwards in the interspaces, especially the submedian, and inwards on the veins; orbicular and reniform almost obsolete except for four more or less distinct points at the angles of each and a curved line on lower edge of latter; postmedial line bent outwards below costa, almost obsolete to vein 2, then angled inwards in submedian fold and outwards on vein 1; a black streak above medial part of vein 4; a slight dark shade from termen below apex with traces of white streaks on it; a black streak above terminal part of vein 3 and slight oblique subterminal streak below vein 2; some dark striæ on termen. Hind wing white, the veins, termen, and inner margin tinged with brown, in female the whole terminal half suffused with brown; the underside with the costal area irrorated with brown, a small discoidal spot.

Hab. Britain, Leech Coll.; France: Germany, Zeller and Leech Colls.; Austria, Frey and Leech Colls.; Hungary, Leech Coll.; Switzerland, Zeller and Frey Colls.; Spain, Bilbao; N. Italy; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus, Bithynia; Persia; W. Turkestan, Turcomania, Issyk Kul; W. Siberia, Altai; E. Turkestan, Kashgar, Ili; Mongolia, Changai Mts. *Exp.* 54–60 millim.

Larva. Meyr. Brit. Lep. p. 48; Barrett, Lep. Brit. vi. p. 92, pl. 240. f. 2.

Ochreous yellow or grey with numerous fine irregular raised black markings; head black; thoracic shield black-brown. Food-plants: *Sonchus* and *Lactuca*. 8·9.

*2108. Cucullia clarior.

Cucullia clarior, Fuchs, Jahrb. Nass. Ver. lvii. p. 31, pl. ii. f. 2 (1904).

Differs from *C. umbratica* in the fore wing being broader, bright ash-grey with a bluish tinge thickly irrorated with white, the streak below base of cell very faint. Hind wing dark grey, paler in male, yellowish at base; cilia of fore wing bright grey, of hind wing pure white. Antennæ grey, whitish at base.

Hab. S. Russia, Sarepta; C. Asia. *Exp.* 54 millim. This species is unknown to me.

*2109. Cucullia anthemidis.

Cucullia anthemidis, Guen. Noct. ii. p. 140 (1852); Mill. Icones, iii. pl. 145. ff. 6–8; Staud. Cat. Lep. pal. p. 215.

♂. Head and thorax grey-white slightly tinged with brown; frons and vertex of head with blackish bars; tegulæ with black line near base, two slight brown medial lines and brown tips; patagia with a few black scales near upper edge; vertex of thorax suffused with brown, the metathorax with black spot; abdomen grey-white slightly tinged with brown, the dorsal crests blackish. Fore wing grey-white slightly tinged with brown especially on costal area, the veins with slight dark streaks; a slight dark streak in submedian fold to below origin of vein 2; subbasal line represented by a slight oblique striga from costa; antemedial line indistinct, double, very strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform only defined by faint dark points on their margins; postmedial line almost obsolete except below vein 2, where it is angled inwards in submedian fold and excurved above vein 1; slight black streaks above veins 4, 3 beyond angle of cell; slight brown and white streaks before termen above veins 6, 5, 4; a slight oblique black streak below extremity of vein 2; some slight black lunules on termen towards apex and striæ towards tornus; cilia brownish white. Hind wing white slightly tinged with brown, the veins brown; the terminal area suffused with brown except towards tornus; cilia white with slight brown line near base from apex to vein 2; the underside white with the veins and termen slightly tinged with brown.

♀. Fore wing with slight white patch in submedian interspace before postmedial line; hind wing with the terminal area broadly suffused with fuscous brown.

Hab. S.E. France, Digne, in Coll. Püngeler. *Exp.* 40–46 millim.

This may be a local form of *C. dracunculi.*

Larva. Kirby, Butt. & Moths Eur. p. 256; Hffm. Raup. p. 128, pl. 34. f. 4.

Pale violet-grey; dorsal and subdorsal lines double, edged with black; lateral line dull white. Food-plant, *Aster acris.* 9, 10.

*2110. Cucullia linosyridis.

Cucullia linosyridis, Fuchs, Soc. Ent. xviii. p. 83 (1903); Fuchs, jun., Jahrb. Nass. Ver. 1904, p. 32, pl. ii. ff. 3, 4, 12.

Head and thorax purplish grey mixed with dark brown; frons at middle and above and vertex of head with black bars; tegulæ with black line near base, two slight medial brown lines and brown tips; patagia with some black scales near upper edge; vertex of thorax with blackish fascia; tibiæ with slight black streaks; abdomen grey suffused and irrorated with dark brown, the dorsal crests blackish; male with protrusible tufts of long rufous hair from lateral stigmata. Fore wing purplish grey, the costal area suffused with fuscous brown except towards base, the end of cell tinged with rufous, the veins with slight black streaks; subbasal line represented by a slight oblique striga from costa; antemedial line indistinct, double, very strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform defined by slight dark points on their margins, the latter with slight curved line below it; postmedial line almost obsolete except below vein 2, where it is indistinctly double, angled inwards in submedian fold and excurved just above vein 1; a slight blackish streak beyond the cell above vein 4; slight whitish and dark streaks in the interspaces before termen and a slight oblique black streak below extremity of vein 2; the termen with slight black lunules towards apex and striæ towards tornus; cilia brownish grey with slight dark line through them. Hind wing whitish tinged with brown, the veins brown, the terminal area broadly suffused with brown; cilia white with a brown line near base; the underside whitish, the costal area irrorated with fuscous, the veins fuscous, the terminal area suffused with fuscous, a slight discoidal point.

Hab. W. Germany, Wiesbaden, St. Goarschausen, in Coll. Püngeler; S. Russia, Sarepta. *Exp.* 46 millim.

This may be a local form of *C. dracunculi.*

Larva. Brownish grey, the sides pale; dorsal stripe pale, subdorsal stripes dark grey. Food-plant, *Linosyris vulgaris.* 8, 9.

2111. Cucullia extricata. (Plate XCVII. fig. 6.)

Xylina extricata, Wlk. xi. 630 (1857).

♂. Head and thorax pale reddish brown sometimes more or less mixed with fuscous; frons with blackish bar above; tegulæ with two black lines near base and two faint medial lines; patagia with some black scales near upper edge; tibiæ with black streaks; abdomen whitish tinged with pale reddish brown and dorsally with some ochreous. Fore wing very pale reddish brown; a slight black streak in submedian fold to the very indistinct antemedial line, which is highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform each represented by four black points on their edges; a slight oblique black bar from middle of costa; postmedial line represented by some black points on costa and median nervules and by a whitish lunule in submedian interspace, with dentate black mark before it and oblique fascia from beyond it to termen below vein 3; slight black streaks above vein 4 towards termen and on extremity of veins; some fuscous suffusion and pale points on termen towards apex; a terminal series of black striæ. Hind wing white, the veins of terminal half and terminal area suffused with brown.

♀. Fore wing with the inner area from base to postmedial line and to just above median nervure suffused with black.

Hab. Natal (*Gueinzius*), 1 ♂, Durban (*Leigh*) 1 ♀; Cape Colony, 2 ♂, 1 ♀ type, Annshaw (*Miss F. Barrett*), 1 ♀, Transkei (*Miss F. Barrett*), 3 ♀, Knysna, 1 ♀. *Exp.* 42–48 millim.

2112. Cucullia virgaureæ.

Cucullia virgaureæ, Boisd. Gen. et Ind. Meth. p. 154 (1840); Ev. Bull. Mosc. 1857, i. p. 66; Staud. Cat. Lep. pal. p. 215.
Cucullia draconculi, Ev. Faun. Volg. et Ur. p. 304; Herr.-Schäff. Eur. Schmett., Noct. f. 194 (nec Hübn.).

Head and thorax purplish grey mixed with brown; frons with blackish bar; tegulæ with black line near base, two dark medial lines and black tips; patagia with some black scales near upper edge; abdomen ochreous brown, the dorsal crests dark, the anal tuft greyish. Fore wing purplish grey tinged with rufous especially in and beyond cell, the costal and inner areas darker; the veins with fine dark streaks; antemedial line almost obsolete except from cell to inner margin, where it is very strongly angled outwards in submedian fold and inwards on vein 1; orbicular and reniform represented by four dark points on their edges, a curved streak below end of cell representing lower edge of latter; postmedial line obsolete except from vein 2 to inner margin, where it is angled inwards in submedian fold and outwards on vein 1; a blackish streak above middle of vein 4 and an oblique subterminal streak below vein 2; some whitish streaks in interspaces of terminal area; a terminal series of black striæ. Hind wing whitish tinged with brown, the veins and terminal half darker; cilia whitish; the underside with small discoidal spot.

Hab. Russia, Urals; W. Siberia, Altai, Zeller Coll.; W. Turkestan, Issyk Kul; E. Turkestan, Ili. *Exp.* 44–50 millim.

2113. Cucullia distinguenda. (Plate XCVII. fig. 7.)

Cucullia distinguenda, Staud. Iris, v. p. 368, pl. 3. f. 7 (1892); id. Cat. Lep. pal. p. 215.

Head and thorax purplish grey mixed with brown; frons with blackish bar; tegulæ with black line near base, two slight medial lines and blackish tips; abdomen yellowish brown, the ventral surface grey irrorated with brown. Fore wing purplish grey irrorated with fuscous, the costal area, end of cell and area just beyond it suffused with brown; the veins streaked with black; a fine black streak in submedian fold to the antemedial line; subbasal line represented by a slight striga from costa; antemedial line black defined by white on inner side, strongly angled outwards in the interspaces, in submedian fold almost to the postmedial line and inwards on the veins; orbicular and reniform pale brownish defined by black points, the former rather quadrate, the latter angled inwards on median nervure and defined by a curved line below; postmedial line obsolete except below vein 2, where it is defined by whitish on outer side, strongly angled inwards in submedian fold and outwards on vein 1; the terminal area with slight white streaks defined on each side by brown; a slight oblique brown streak below extremity of vein 2; a terminal series of black striæ. Hind wing suffused with reddish brown, the terminal area rather darker; cilia white; the underside pale irrorated and the costal and terminal areas suffused with brown, a brown discoidal spot with streak before it in cell.

Hab. W. Turkestan, Issyk Kul; E. Turkestan, Ili; Tibet, Amdo; E. Siberia, Dahuria, Kentei, 1 ♂, 1 ♀, Amurland. *Exp.* 52 millim.

2114. Cucullia chamomillæ.

Noctua chamomillæ, Schiff. Wien. Verz. p. 73 (1776); Sepp, Ins. iii. pl. 25. f. 6; Esp. Schmett. iv. pl. 193. ff. 1, 2; Hübn. Eur. Schmett., Noct. f. 261; Dup. Lép. Fr. vii. p. 427, pl. 123. f. 3; Steph. Ill. Brit. Ent., Haust. iii. p. 89; Staud. Cat. Lep. pal. p. 216.
Noctua fissina, Haw. Lep. Brit. p. 166 (1809); Steph. Ill. Brit. Ent., Haust. iii. p. 90.
Noctua chrysanthemi, Hübn. Eur. Schmett., Noct. f. 686 (1827).
Noctua lucifuga, Dup. Lép. Fr. vii. p. 432, pl. 127. f. 1 (1827).
Cucullia calendulæ, Treit. Eur. Schmett. x. 2, p. 127 (1835).
Cucullia leucanthemi, Rmbr. Cat. Lép. S. And. pl. 9. f. 3 (1858).

Head and thorax grey mixed with brown; frons with blackish bar above; tegulæ with black line near base, two medial fuscous lines and fuscous tips; tibiæ with black stripes; abdomen grey tinged with brown; the dorsal crests blackish. Fore wing grey-brown; the veins with fine dark streaks; a fine black streak in base of submedian fold; antemedial line indistinct, very strongly dentate

outwards in the interspaces and inwards on the veins; orbicular represented by black points before and beyond it; reniform with very indistinct dark points on its edges; postmedial line obsolete on costal half, oblique, dentate below vein 4; sometimes connected with antemedial line in submedian fold; the interspaces of terminal area with pale streaks defined on each side by brown streaks, an oblique black streak below vein 2; cilia grey intersected with black at the veins. Hind wing whitish, the veins and terminal half brown; cilia white at tips; the underside whitish irrorated with brown.

Ab. 1. *chrysanthemi*. Fore wing largely suffused with fuscous.

Ab. 2. *calendulæ*. Fore wing greyer and less strongly marked.

Ab. 3. *leucanthemi*. Fore wing with a slight yellowish tinge.—Andalusia.

Hab. Britain, Leech Coll.; France; Germany, Zeller and Leech Colls.; Austria, Frey Coll.; Switzerland; Spain, Andalusia; Corsica; Italy, Leech Coll.; Dalmatia, Leech Coll.; Morocco (*Meade-Waldo*), 2 ♂; Canaries; Madeira; Scandinavia; Russia, Zeller Coll., Livonia; Asia Minor, Bithynia, Pontus, Lydia; Syria; Egypt; W. Turkestan, Turcomania, Samarkand (*Haberhauer*), 2 ♀, Sarawschan. *Exp.* 44–54 millim.

Larva. Meyr. Brit. Lep. p. 48; Barrett, Lep. Brit. vi. p. 88, pl. 240. f. 1.

Pale yellow-green with a purplish-pink band on each segment; a subdorsal series of oblique olive-green marks; lateral and spiracular lines irregular, olive-green, interrupted; head yellow-green. Food-plants: *Pyrethrum* and *Anthemis*. 6–7.

2115. Cucullia terrensis. (Plate XCVIII. fig. 21.)

Cucullia terrensis, Feld. Reis. Nov. pl. 108. f. 53 (1874).
Cucullia africana, Auriv. Œfv. Ak. Forh. xxxvi. (7) p. 59 (1879).

Head and thorax blue-grey mixed with fuscous; frons with black bar above; tegulæ with black line near base, two slight medial lines and fuscous tips; abdomen pale grey suffused with brown towards extremity and with the dorsal crests dark. Fore wing blue-grey, more or less irrorated and suffused with fuscous brown; the veins with fine dark streaks; a slight black streak in base of submedian fold; subbasal line represented by an oblique striga from costa and two slight streaks in base of cell; antemedial line double, dentate, very strongly angled outwards in submedian fold and above inner margin and inwards on vein 1; claviform represented by two slight streaks; orbicular defined by four black points; reniform incompletely defined by black points and striæ; a more or less prominent dark medial shade, oblique from costa to lower angle of cell and obscuring part of the reniform; postmedial line double at costa and below vein 2, obsolescent between these points, waved, bent outwards below costa and oblique below vein 4, some pale points beyond it on costa; subterminal line represented by a series of slight somewhat dentate black marks in the interspaces; a terminal series of small black lunules. Hind wing white, the veins and terminal

area suffused with fuscous especially in female; cilia white; the underside with the costal and terminal areas irrorated with brown.

Hab. German S.W. Africa, Damaraland, type † ♀ *africana*, in Mus. Stockholm; Natal, Durban (*Leigh*), 1 ♀; Cape Colony, Capetown (*Lightfoot*), 1 ♂, 1 ♀. *Exp.* 44–46 millim.

2116. Cucullia dentilinea. (Plate XCVII. fig. 8.)

Xylina dentilinea, Smith, J. N.Y. Ent. Soc. vii. p. 229 (1899); Dyar, Cat. Lep. N. Am. p. 169.

♀. Head and thorax grey mixed with fuscous and black; abdomen yellowish brown, the ventral surface paler. Fore wing grey-white thickly irrorated with fuscous; the veins streaked with black; a slight black streak below base of cell; subbasal line represented by a dark striga from costa; antemedial line indistinctly double, the outer line strong, dentate, very strongly angled outwards in submedian fold; orbicular defined by two points above and a short streak below, the reniform by short streaks above and below and points on outer side; postmedial line indistinct from costa to vein 2, then prominent, bent outwards below costa, obliquely waved to vein 2, angled inwards in submedian fold and excurved at vein 1; subterminal line represented by some slight black marks; short streaks in interspaces of terminal area above and below vein 6, above vein 3, and an oblique streak across extremity of vein 2; some slight terminal lunules. Hind wing whitish, the veins, costal and terminal areas more or less strongly suffused with fuscous; cilia white at tips; the underside whiter.

Hab. U.S.A., Colorado (*Bruce*), 1 ♀, Arizona, Gila Co., Pinal Mts. (*Kunze*), 1 ♀. *Exp.* 34–38 millim.

2117. Cucullia boryphora.

Cucullia boryphora, F. de Waldh. Bull. Soc. Mosc. 1840, p. 85, pl. 3. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 508; Staud. Cat. Lep. pal. p. 216.
Cucullia lignata, Guen. Ind. Meth. p. 246 (1841).
Cucullia rimula, Frr. Neue Beitr. iv. p. 110, pl. 352. f. 1 (1842).

♂. Fore wing whitish mixed with grey; frons with blackish bar above; tegulæ with black line near base, slight medial line and line near tips; abdomen white irrorated with grey, the dorsal crests dark. Fore wing white irrorated and suffused with grey-brown; a black streak in submedian fold becoming fine beyond middle; a slight black streak in cell forking towards extremity; traces of a highly dentate antemedial line; postmedial line only traceable below vein 2, where it is defined by white on outer side, angled inwards in submedian fold and outwards on vein 1; the veins of terminal area blackish slightly defined by white; slight black streaks above veins 6, 5, 4, increasing in length inferiorly, and a more prominent oblique streak below vein 2; a terminal series of black marks. Hind wing white, the veins and termen tinged with fuscous.

♀. Abdomen with the anal segment edged with red-brown below; hind wing with the terminal area suffused with fuscous.

Hab. S. Russia; Armenia; Asia Minor, Konia; Persia; W. Turkestan, Turcomania, Askabad, 1 ♂, 1 ♀, Ferghana, Issyk Kul; E. Turkestan, Ili. *Exp.* 36 millim.

*2118. Cucullia achilleæ.

Cucullia achilleæ, Guen. Noct. ii. p. 139 (1852); Rmbr. Cat. Lép. S. And. pl. 10. f. 1; Staud. Cat. Lep. pal. p. 216.

Head and thorax grey-white; tegulæ with fine black lines at middle and tips; abdomen whitish. Fore wing grey-white with a faint bluish tinge; the veins with dark streaks; a black streak below base of cell; antemedial line represented by a slight striga from costa and two very oblique lines from vein 1 to inner margin; some dark suffusion on medial part of costa; orbicular and reniform absent; a medial line from costa to the postmedial line at submedian fold, defined by grey on outer side at costa and slightly angled outwards on median nervure; postmedial line double and angled outwards below costa, then obsolete to vein 4, then very oblique and bent outwards at vein 1; an oblique series of dark marks in the interspaces of terminal area from below apex to vein 4 and an oblique streak below extremity of vein 2; a terminal series of dark striæ; cilia with fine dark lines through them. Hind wing white, the veins and termen tinged with brown, a fine dark terminal line; cilia white.

Hab. Spain, Andalusia. *Exp.* 36 millim. This species is unknown to me.

2119. Cucullia tanaceti.

Noctua tanaceti, Schiff. Wien. Verz. p. 73 (1776); Knoch, Beitr. ii. p. 29, pl. 2. ff. 1–9; Hübn. Eur. Schmett., Noct. f. 265; Dup. Lép. Fr. vii. p. 429, pl. 126. f. 4; Staud. Cat. Lep. pal. p. 215.

Head and thorax purplish grey mixed with brown; frons with blackish bar; tegulæ with black line near base and two slight medial lines; tibiæ with dark streaks; abdomen whitish dorsally tinged with brown especially towards extremity, the crests dark; male with orange tufts protrusible from lateral stigmata. Fore wing purplish grey suffused with pale brown, the veins with fine dark streaks; subbasal line represented by a slight oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is strongly angled outwards in the interspaces, especially the submedian, and inwards on the veins; claviform sometimes represented by a black streak on its upper edge; a slightly curved black streak from or from before origin of vein 2 to vein 4 beyond the cell; postmedial line obsolete except from vein 2 to inner margin, where it is angled inwards in submedian fold and outwards on vein 1; a black streak above middle of vein 4; some slight dark streaks from termen below apex. Hind wing white, the veins and

termen suffused with brown, especially in female; the underside with the costal area irrorated with brown, a discoidal point.

Hab. France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Sweden; Russia, Livonia Armenia; Asia Minor, Pontus, Bithynia; W. Turkestan, Ferghana, Sarawschan; E. Turkestan, Ili. *Exp.* 46–50 millim.

Larva. Kirby, Butt. & Moths Eur. p. 257.

Pale pearly grey with yellow dorsal and lateral stripes and numerous black dots and spots. Food-plants: *Tanacetum vulgare* and *Artemisia vulgaris*. 7–8.

2120. Cucullia dorsalis. (Plate XCVII. fig. 9.)

Cucullia dorsalis, Smith, Proc. U.S. Nat. Mus. xv. p. 47 (1892); id. Cat. Noct. N. Am. p. 238.

Head and thorax grey-white mixed with fuscous; frons with blackish bar; tegulæ with black line near base, two slight medial lines and slight line at tips; tibiæ with black streaks; abdomen grey-white irrorated with fuscous, the dorsal crests dark. Fore wing grey-white thickly irrorated with fuscous; the veins with fine black streaks; subbasal line represented by a slight oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins, an oblique striga before it above inner margin; a curved black streak below end of cell representing the lower edge of reniform; postmedial line almost obsolete except from vein 2 to inner margin, angled inwards and more or less bidentate in submedian interspace, the lower tooth longer and acute, then angled outwards on vein 1; blackish streaks above middle of veins 6 and 4, a slight shade from termen below apex with faint white streaks on it, a short black streak above termination of vein 3, and an oblique streak below vein 2 connected with a slight streak in submedian fold beyond postmedial line. Hind wing white, the veins and termen suffused with brown, especially in female; the underside with the costal area irrorated with brown.

Hab. U.S.A., Colorado (*Cockerell*, *Bruce*), 2 ♂, 1 ♀, Glenwood Springs, 1 ♂, Denver (*Oslar*), 4 ♂, 1 ♀, Durango (*Oslar*), 1 ♂, 1 ♀. *Exp.* 50–52 millim.

2121. Cucullia speyeri. (Plate XCVII. fig. 10.)

Cucullia speyeri, Lintn. New York State Cab. Ann. Rep. 26, p. 168, ff. 13, 14 (1874); Smith, Cat. Noct. N. Am. p. 238.

Head and thorax grey-white mixed with dark brown; frons with blackish bar; tegulæ with black line near base, two slight medial lines and brown tips; thorax dorsally dark brown; tibiæ with dark streaks; abdomen grey-white irrorated with brown, the dorsal crests darker. Fore wing pale grey thickly irrorated with brown; the veins with fine dark streaks; subbasal line represented by an oblique striga from costa; a fine black streak in submedian fold to

the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; orbicular represented by a slight dark streak on its lower edge, a curved streak below end of cell representing the lower edge of reniform and slight traces of its upper edge; postmedial line almost obsolete except from vein 2 to inner margin, angled inwards and more or less bidentate in submedian interspace, the lower tooth being long and acute, usually with slight diffused white patch before it, then angled outwards on vein 1; a slight black streak above medial part of vein 4; a slight brown shade from termen below apex with faint white streaks on it, a short black streak above terminal part of vein 3 and an oblique streak below vein 2 connected with a streak in submedian fold beyond the postmedial line. Hind wing white, the veins and termen tinged with brown, especially in female; the underside with the costal area irrorated with brown.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 1 ♀; U.S.A., E. States to Pennsylvania and West to Montana, Massachusetts, Buffalo, 1 ♀, N. York, 3 ♂, Illinois, 1 ♂, Montana, Miles City, 1 ♂. *Exp.* 46–50 millim.

2122. Cucullia lætifica. (Plate XCVII. fig. 13.)

Cucullia lætifica, Lintn. Grote's Check List Noct. p. 24 (1875); Smith, Cat. Noct. N. Am. p. 237.
Cucullia cita, Grote, Papilio, iii. p. 75 (1883).
Cucullia hartmanni, French, Can. Ent. xx. p. 69 (1888).

Head and thorax grey-white mixed with fuscous; frons with blackish bar; tegulæ with black line near base, two slight medial lines and dark tips; dorsum of thorax dark brown; tibiæ streaked with black; abdomen whitish tinged with brown, the dorsal crests dark. Fore wing grey-white thickly irrorated with fuscous; the veins with fine black streaks; subbasal line represented by a slight oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is very highly angled outwards in the interspaces and inwards on the veins, an oblique black striga before it above inner margin; a curved black streak below end of cell representing the lower edge of reniform; postmedial line almost obsolete except from vein 2 to inner margin, angled inwards in submedian interspace, the sinus being single and more or less rounded at extremity and with a diffused whitish mark before it, then angled outwards on vein 1; a black streak above middle of vein 4; a slight dark shade from termen below apex with traces of white streaks on it; a black streak above extremity of vein 3 and an oblique streak below vein 2 connected with a slight streak in submedian fold beyond postmedial line. Hind wing white, the veins and termen tinged with brown, especially in female.

Hab. U.S.A., Texas, Arizona, Nogales (*Oslar*), 2 ♂, 2 ♀, Prescott (*Kunze*), 1 ♀. *Exp.* 44–46 millim.

Larva. Head black and yellow-green in vertical stripes, a narrow black line edging clypeus. Body slightly enlarged at joint 12,

yellow-green with more or less distinct shaded red dorsal and substigmatal bands. Surface marked irregularly with black forming a series of broken dorsal rings, broad subdorsal band, erect lines on the sides and irregular subventral marks. Feet ringed with black. Food-plants : low Compositæ.—H. G. D.

2123. Cucullia buddhæ. (Plate XCVII. fig. 14.)

Lithomia buddhæ, Wlk. xv. 1731 (1858).
Cucullia phocylides, Druce, Biol. Centr.-Am., Het. ii. p. 488 (nec i. p. 298).

Head, thorax, and abdomen grey mixed with brown ; tegulæ with slight medial dark line. Fore wing grey tinged with brown and irrorated with fuscous ; the veins with fine dark streaks ; antemedial line double and irregular towards costa, then single, very strongly angled outwards in submedian fold and above inner margin and inwards on vein 1 ; two slight dark streaks below middle of costa ; reniform represented by a slight curved mark on its lower edge ; the postmedial line represented by an oblique striga from costa, obsolete to vein 2, then indistinct, strongly angled inwards in submedian fold and outwards on vein 1 ; subterminal line represented by a series of slight dentate dark marks, oblique below vein 4, with an oblique mark beyond it on vein 2 and round spot before it below vein 2 ; a terminal series of small black lunules. Hind wing white tinged with brown, especially on the veins and terminal area ; cilia brown, white at tips.

Hab. Costa Rica, Candelaria Mts. (*Underwood*), 1 ♂, Godman-Salvin Coll. ; Venezuela, type in Mus. Oxon. *Exp.* 40–46 millim.

2124. Cucullia phocylides.

Cucullia phocylides, Druce, Biol. Centr.-Am., Het. i. p. 298, pl. 23. f. 3 (1889).

♀. Head and thorax pale red-brown ; tegulæ grey except at tips, with black medial line ; abdomen grey suffused with reddish brown. Fore wing grey suffused with red-brown especially on medial area ; subbasal line represented by a slight oblique striga from costa ; a fine black streak in submedian fold to the antemedial line, which is indistinct, irregular towards costa, then very strongly angled outwards in the interspaces and inwards on the veins ; postmedial line represented by an oblique black striga from costa, obsolete to vein 2, then strongly angled inwards in submedian fold and outwards on vein 1 ; a black streak above vein 4 to near termen ; a series of short rufous streaks in interspaces of terminal area, a more elongated streak above vein 7, and a subterminal spot in submedian interspace ; a black streak on inner margin towards tornus ; some black striæ on termen. Hind wing white tinged with brown, especially on the veins and terminal area ; the underside with the costal and terminal areas irrorated with brown.

Hab. Mexico, Guerrero (*H. H. Smith*), 1 ♀ type, Godman-Salvin Coll. *Exp.* 52 millim.

2125. Cucullia fraterna.

Cucullia fraterna, Butl. A. M. N. H. (5) i. p. 198 (1878); id. Ill. Het. B. M. iii. p. 18, pl. xlv. f. 10.

Head and thorax brown mixed with grey; tegulæ with the basal half whiter with a black line near base; tibiæ with dark streaks; abdomen grey suffused with brown, the dorsal crests darker. Fore wing grey tinged with brown; the veins finely streaked with brown; a black streak in submedian fold to the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; a curved streak below end of cell representing the lower edge of reniform; a slight oblique medial shade from costa to lower angle of cell; postmedial line obsolete except from vein 3 to inner margin, where it is strongly angled inwards in submedian fold and outwards on vein 1; a black streak above vein 4 to near termen, where it is connected with a triangular brown shade from termen below apex; an oblique brown streak below terminal part of vein 2; a terminal series of black lunules. Hind wing whitish, the veins and terminal area brown; cilia whitish; the underside white, the veins and terminal area suffused with brown, the costal area irrorated with brown, a discoidal point.

Hab. Japan, Hakodate, 1 ♀ type, Tokio (*Fenton*), 1 ♂, Yokohama (*Pryer*), 1 ♂, 3 ♀; E. China, Haiming (*J. J. Walker*), 1 ♀. *Exp.* 46–54 millim.

2126. Cucullia lactucæ.

Noctua lactucæ, Schiff. Wien. Verz. p. 74 (1776); Esp. Schmett. iv. pl. 137. ff. 4–6 (1788); Hübn. Eur. Schmett., Noct. f. 264; Dup. Lép. Fr. vii. p. 424, pl. 126. f. 2; Staud. Cat. Lep. pal. p. 216.

Cucullia pustulata, Ev. Bull. Soc. Mosc. 1842, iii. p. 551, pl. 5. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 189.

Cucullia campanulæ, Herr.-Schäff. Eur. Schmett. ii. p. 316, vi. p. 58, Noct. f. 188 (nec Frr.).

Head and thorax purplish grey mixed with dark brown; tegulæ with black line near base and two brown medial lines; abdomen brown mixed with grey, the dorsal crests dark, the ventral surface pale. Fore wing purplish grey irrorated and partly suffused with brown; the veins with fine dark streaks; the submedian fold with fine black streak to the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; reniform with very incomplete dark outline and curved streak representing its lower edge; a slight oblique brown shade from costa to lower angle of cell; postmedial line obsolete except from vein 2 to inner margin, where it is strongly angled inwards in submedian fold and outwards on vein 1; a black streak above vein 4 connected with a series of diffused brown streaks from termen below apex; an oblique black streak below extremity of vein 2; a terminal series of small black lunules. Hind wing whitish suffused with reddish brown, especially on the veins and terminal area; cilia white; the underside whitish irrorated with brown, a slight discoidal lunule.

Hab. France, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland, Zeller and Leech Colls.; ? Italy; Scandinavia; Russia, Livonia; Armenia; ? Asia Minor, Bithynia; W. Siberia, Altai; Mongolia, Urga; E. Siberia, Amur. *Exp.* 46–58 millim.

Larva. Hübn. Larv. Lep. iv. Noct. ii. Gen. v. *b*, *c*, f. 1, *a*, *b*, *c*; Kirby, Butt. & Moths Eur. p. 257, pl. 41. f. 4.

White with yellow dorsal and lateral maculate stripes; a subdorsal series of large oval segmental and oblong intersegmental black spots. Food-plants: sow-thistle and lettuce, chiefly the flowers. 7–8.

2127. Cucullia minuta. (Plate XCVII. fig. 15.)

Cucullia minuta, Möschl. Verh. z.-b. Ges. Wien, xxxiii. p. 295, pl. xvi. f. 9 (1884).

♀. Head and thorax grey mixed with brown and fuscous; tegulæ with black line near base and dark medial line and tips; abdomen grey irrorated with brown. Fore wing purplish grey irrorated and suffused with fuscous brown, the veins with fine black streaks; subbasal line represented by an oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; a black streak in lower end of cell; a curved black streak below end of cell representing the lower edge of reniform; postmedial line represented by a very oblique black bar across submedian interspace; a black streak above vein 4 to an oblique series of short black streaks from termen below apex, and a short streak above middle of vein 6; subterminal line represented by oblique streaks above and below vein 2; a terminal series of small dentate black marks. Hind wing white, the veins and terminal half fuscous brown; cilia white.

Hab. Cape Colony, Grahamstown, 1 ♀, Annshaw (*Miss F. Barrett*), 2 ♀. *Exp.* 40–44 millim.

2128. Cucullia dracunculi.

Noctua dracunculi, Hübn. Eur. Schmett., Noct. f. 586 (1827); Dup. Lép Fr. vii. p. 409, pl. 125. f. 3; Staud. Cat. Lep. pal. p. 215.

Cucullia incana, Ev. Bull. Mosc. 1842, iii. p. 551; Herr.-Schäff. Eur. Schmett., Noct. f. 184.

Cucullia amota, Alph. Stett. ent. Zeit. 1887, p. 171; id. Rom. Mém. v. p. 177, pl. 7. f. 11.

Head and thorax purplish grey mixed with brown; frons with black bar; tegulæ with black line near base, two brown medial lines and brown line near tips; patagia with some black scales near upper edge; abdomen pale dorsally tinged with brown, the crests dark, the anal tuft greyish. Fore wing purplish grey irrorated with brown; the costal area suffused with brown; some pale rufous suffusion in and beyond end of cell; the veins with fine dark streaks; subbasal line represented by an oblique striga from costa; a fine

dark streak in submedian fold to the antemedial line, which is indistinctly double, very highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform incompletely defined by brown, the former rather constricted at middle, the latter angled inwards on median nervure; postmedial line obsolete except from vein 2 to inner margin, where it is angled inwards in submedian fold and outwards on vein 1; a slight black streak above middle of vein 4 and an oblique subterminal streak below vein 2; some whitish streaks in interspaces of terminal area; a terminal series of black striæ. Hind wing whitish, the veins and terminal area suffused with brown; cilia white.

Ab. 1. *amota*. Fore wing greyer and less irrorated with brown. —W. & E. Turkestan.

Hab. Hungary, Leech Coll.; S. Russia, Zeller and Leech Colls.; W. Siberia, Altai; W. Turkestan, Turkomania, Ferghana, Issyk Kul; E. Turkestan, Ili. *Exp.* 40–44 millim.

Larva. Greyish yellow with slight dark striation; dorsal and lateral lines formed of rufous points; sublateral line whitish.

2129. Cucullia pullata. (Plate XCVII. fig. 11.)

Callænia pullata, Moore, P. Z. S. 1881, p. 358; Hmpsn. Moths Ind. ii. p. 239.

♀. Head and thorax grey mixed with purple-brown; tegulæ with black line near base; tibiæ with dark streaks; abdomen black-brown, greyish at base, extremity, and on ventral surface, with lateral tufts of white hair from base. Fore wing purple-grey tinged with brown and with slight dark irroration; subbasal line with slight striæ from costa and cell; a fine black streak in submedian fold to the antemedial line, which is indistinct, irregular, very strongly angled outwards in submedian fold; orbicular incompletely defined by black, sometimes reduced to four points; reniform represented by a slight black streak on its upper edge and curved streak on lower; postmedial line obsolete except from vein 4 to inner margin, where it is very indistinct, strongly angled inwards in the interspaces and outwards on the veins; a black streak above vein 4 to near termen, where it is connected with a series of slight brown streaks from termen below apex; a terminal series of small black lunules. Hind wing white; a large black discoidal lunule connected with the blackish costal area; terminal area broadly black, its inner edge waved and bent outwards to tornus: cilia white; the underside with the costal area irrorated with brown, a black mark in base of cell, the discoidal black spot quadrate.

Hab. W. China, Chia-kou-ho (*Pratt*), 1 ♀; Punjab, Dalhousie, 1 ♀ type. *Exp.* 74 millim.

2130. Cucullia santolinæ.

Cucullia santolinæ, Rmbr. Ann. Soc. Ent. Fr. iii. p. 387, pl. 8. f. 4 (1834); Dup. Lép. Fr., Suppl. iii. p. 418, pl. 37. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 198; Staud. Cat. Lep. pal. p. 216.

Cucullia verdeti, Costa, Faun. Reg. Nap., Lep. (5) p. 23, pl. 14. ff. 1–3 (1872–76).

Head and thorax grey mixed with brown; frons with blackish bar above; tegulæ with black line near base, two fuscous medial lines and fuscous tips; vertex of thorax with dark streak; abdomen grey dorsally tinged with brown, the dorsal crests dark. Fore wing brownish grey with fine black streaks on the veins and in submedian fold; antemedial line very highly dentate outwards in the interspaces and inwards on the veins; two slight brown streaks in end of cell; a curved brown streak below end of cell representing lower edge of reniform; a slight oblique medial shade from costa to lower angle of cell; postmedial line obsolete except from vein 3 to inner margin, where it is strongly angled inwards in submedian fold; a fine black streak above vein 4 to before termen, with a series of slight brown streaks above it to termen below apex; an oblique black streak below extremity of vein 2. Hind wing brown, the interspaces rather paler except on terminal area; cilia white with fine brown line at base; the underside whitish, the costal and terminal areas irrorated with brown, the veins brown.

Hab. S. France, Leech Coll.; ? Switzerland; Spain, Andalusia; Corsica, Leech Coll.; Italy; Algeria; ? W. Turkestan; Turcomania; ? Mongolia, Uliassutai. *Exp.* 48–50 millim.

Larva. Kirby, Butt. & Moths Eur. p. 258; Hoffm. Raup. p. 128, pl. 34. f. 2.

Dull green or reddish with white spots on the back and black and violet lines and streaks on sides. Food-plant, *Artemisia*. 4 & 7.

2131. Cucullia tecca. (Plate XCVII. fig. 16.)

Cucullia tecca, Püng. Iris, xix. p. 96 (1906).

Head and thorax grey-white mixed with dark brown; frons and vertex of head with blackish bars; tegulæ with black line near base, two ill-defined medial lines and one near tips; abdomen whitish dorsally tinged with yellow-brown, the dorsal crests black at tips. Fore wing rather short, grey-white, largely irrorated and suffused with fuscous brown; the veins streaked with black; a fine black streak in base of submedian fold; subbasal line represented by a slight black striga from costa; antemedial line indistinctly double, strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform almost obsolete, the latter represented by a curved black streak below end of cell; postmedial line obsolete except below vein 2, where it is angled inwards in submedian fold and outwards on vein 1; a black streak below middle of vein 7; a series of slight streaks from termen below apex to above middle of vein 4; small subterminal spots sometimes present between veins 4 and 2; an oblique streak below extremity of vein 2; bases of cilia intersected by black streaks. Hind wing pale nearly uniformly suffused with fuscous brown, the inner area rather paler; cilia white with a brown line through them; the underside white irrorated with brown, the veins brown.

Ab. 1. ♂. Head, thorax, and fore wing bluer grey with much less fuscous suffusion and irroration. ♀ typical.—Jerusalem.

Hab. Palestine, Jerusalem, Coll. Püngeler; W. Turkestan, Askabad, 1 ♂, 1 ♀. *Exp.* 42 millim. Type † ♂ ♀ in Coll. Püngeler.

2132. Cucullia inderiensis.

Cucullia inderiensis, Herr.-Schäff. Eur. Schmett. vi. p. 178, Noct. f. 634 (1852); Staud. Cat. Lep. pal. p. 216.

Head, thorax, and abdomen pale grey tinged with reddish brown; palpi blackish at sides; frons with black bar; tegulæ with black line near base; dorsum of thorax darker grey; tibiæ streaked with black; tarsi fuscous with pale rings; abdomen with the dorsal crests darker at tips. Fore wing yellowish suffused and irrorated with grey-brown; the veins streaked with black; a fine black streak on yellow fascia below base of cell; antemedial line highly angled outwards in the interspaces and inwards on the veins; two slight brown streaks in end of cell; postmedial line almost obsolete except below vein 2, where it is strongly incurved in submedian fold and excurved on vein 1; the terminal area with rufous streaks in the interspaces defined on each side by pale yellow streaks; some white points on costa; cilia intersected by black streaks at base. Hind wing pale suffused with brown, the veins and termen deeper brown; cilia whitish with a brown line through them; the underside whitish thickly irrorated with brown.

Hab. Russia, Urals, 1 ♂; W. Turkestan, Kirghistan, Issyk Kul. *Exp.* 44 millim.

Larva. Christoph. Stett. ent. Zeit. 1893, p. 33.

Bluish green with whitish marblings and yellowish segmental bands; a slender yellow-green dorsal line; lateral and ventral lines white; head pale green with dark points. Food-plant, *Artemisia dracunculus*.

2133. Cucullia præcana.

Cucullia præcana, Ev. Faun. Volg. Ur. p. 304 (1844); id. Bull. Mosc. 1857, p. 62; Herr.-Schäff. Eur. Schmett., Noct. f. 509; Staud. Cat. Lep. pal. p. 215.

Head and thorax purplish grey mixed with fuscous; tegulæ with black line near base, brown medial line and brown tips; abdomen grey dorsally tinged with brown. Fore wing purplish grey thickly irrorated with fuscous, some ochreous in and beyond end of cell; the veins with fine black streaks; subbasal line represented by an oblique striga from costa; a fine black streak in submedian interspace to the antemedial line, which is double, strongly angled outwards in the interspaces, especially the submedian, and inwards on the veins; orbicular and reniform represented by four black points on their edges, a curved black streak below end of cell representing lower edge of latter; postmedial line bent outwards below costa, almost obsolete to vein 2, then angled inwards in submedian fold and outwards on vein 1; a slight black streak above middle of vein 4 and an oblique subterminal streak below vein 2; some whitish streaks in interspaces of terminal area; a terminal

series of black striæ. Hind wing brown, the basal half rather paler; cilia whitish; the underside paler, the costal area irrorated with brown and the terminal area suffused with brown, a slight discoidal spot.

Hab. S.E. Germany, Leech Coll.; Denmark; Russia, Livonia, Leech Coll., Curland, Frey Coll., Urals. *Exp.* 44 millim.

Larva. Rosenberg, Corr. Nat. Ver. Riga, xx. p. 45; Kirby, Butt. & Moths Eur. p. 256.

Golden green with dark irroration and red-brown spots, the lines interrupted, yellow. Food-plant, flowers and young seeds of *Artemisia vulgaris*. 7–8.

2134. Cucullia campanulæ.

Noctua campanulæ, Freyer, Beitr. i. p. 64, pl. 35 (1828); id. Stett. ent. Zeit. 1859, p. 423; Herr.-Schäff. Neue Schmett. f. 127; Staud. Cat. Lep. pal. p. 216.

Head and thorax purple-grey mixed with brown; tegulæ with black line near base and dark medial line; abdomen grey-brown, the ventral surface paler. Fore wing purple-grey irrorated and suffused with brown; subbasal line represented by a dark striga from costa; a black streak in submedian fold to the antemedial line, which is angled outwards below costa and very strongly in cell and submedian fold and above inner margin and inwards on median nervure and vein 1; claviform represented by a slight black streak on its upper edge; traces of the orbicular and reniform, the former rounded, the latter angled inwards on median nervure and with curved black streak representing its lower edge; postmedial line somewhat dentate, bent outwards below costa, nearly obsolete to vein 2, then angled inwards in submedian fold and outwards on vein 1; a black streak above vein 4 connected with some short diffused streaks from termen below apex; a slight black streak above terminal part of vein 3 and an oblique streak below vein 2 towards termen; some slight dark lunules on termen. Hind wing reddish brown, the interspaces of basal half rather paler; cilia white, brownish at base; the underside with slight discoidal lunule.

Hab. ? S.W. France; Germany; Austria; Switzerland, Zeller, Frey, and Leech Colls.; Russia, ? Livonia, ? Urals; Armenia. *Exp.* 50–54 millim.

Larva. Kirby, Butt. & Moths Eur. p. 257.

Pearly white with small white spots and dots, a maculate yellow dorsal stripe and a narrower lateral stripe. Food-plant, *Campanula*. 8.

2135. Cucullia lucifuga.

Noctua lucifuga, Schiff. Wien. Verz. p. 312 (1776); Hübn. Eur. Schmett., Noct. f. 262; Staud. Cat. Lep. pal. p. 216.

Head and thorax purple-grey mixed with dark brown; tegulæ with black line near base and dark medial line; abdomen fuscous brown, the ventral surface grey. Fore wing purple-grey suffused

and irrorated with reddish brown; the veins with fine dark streaks the subbasal line represented by a slight brown striga from costa; a fine black streak in submedian fold to the antemedial line, which is angled outwards below costa and very strongly in submedian fold and above inner margin and inwards on vein 1; an oblique medial line from costa to lower angle of cell; orbicular and reniform sometimes almost obsolete except lower edge of reniform, sometimes incompletely defined by brown, the former round, the latter constricted at middle and angled inwards on median nervure; postmedial line very oblique from costa to medial fold, then nearly obsolete and waved to vein 2, then angled inwards in submedian fold and outwards on vein 1; a more or less developed black streak above medial part of vein 4; a triangular brown shade from termen below apex; an oblique black streak below extremity of vein 2; a series of slight terminal lunules. Hind wing whitish suffused with brown especially on the veins and terminal area, more uniformly suffused in female; cilia white, brownish at base; the underside with discoidal lunule.

Hab. France; Germany, Zeller and Frey Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; S. Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; W. Siberia, Altai; Mongolia, Urga; Tibet, Kuku-noor; E. Siberia, Amurland, Ussuri. *Exp.* 44–54 millim.

Larva. Hübn. Larv. Lep. iv. Noct. ii. Gen. v. *b.* f. 1, *a*; Kirby, Butt. & Moths Eur. p. 257.

Black; a dorsal series of large orange-red and a lateral series of smaller spots. Food-plants: sow-thistle and wild carrot. 7–8.

2136. Cucullia intermedia. (Plate XCVII. fig. 17.)

Cucullia intermedia, Speyer, Stett. ent. Zeit. xxxi. p. 400 (1870); id. New York State Cab. Ann. Rep. 23, p. 217, pl. viii. ff. 5, 7; Smith, Cat. Noct. N. Am. p. 238.

Head and thorax purplish grey mixed with fuscous brown; tegulæ with black line near base, dark medial line and tips; abdomen brownish, the extremity grey irrorated with brown. Fore wing purple-grey irrorated and suffused with fuscous brown; the veins with fine dark streaks; subbasal line represented by an oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; a slight curved streak below end of cell representing the lower edge of reniform; postmedial line bent outwards below costa, almost obsolete to vein 2, then angled inwards to or to near antemedial line in submedian fold and outwards on vein 1; a slight black streak above middle of vein 4; a short streak above extremity of vein 3 and an oblique subterminal streak below vein 2; a terminal series of black points. Hind wing whitish suffused with brown, especially on the veins and terminal area; the underside with slight discoidal spots, the costal area irrorated with brown, the terminal area suffused with brown.

Hab. Canada; U.S.A., E. States to Virginia, New York, Schoharie (*Lintner*), 1 ♂, Albany (*Bailey*), 1 ♀, Centre (*Bailey*), 1 ♀, C. States. *Exp.*, ♂ 50, ♀ 56 millim.

Larva. Shining black, minutely granular; a row of segmentary orange spots on the sides. (After Lintner.)—H. G. D.

2137. Cucullia cinderella. (Plate XCVII. fig. 18.)

Cucullia cinderella, Smith, Proc. U.S. Nat. Mus. xv. p. 49 (1892); id. Cat. Noct. N. Am. p. 238.

Head and thorax purplish grey mixed with fuscous brown; tegulæ with black line near base, two fuscous medial lines and fuscous tips; abdomen grey irrorated and dorsally suffused with fuscous. Fore wing purplish grey thickly irrorated with fuscous; the veins finely streaked with fuscous; a black streak in submedian fold to the antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; orbicular represented by a slight dark streak on its lower edge; a curved streak below end of cell representing lower edge of reniform; postmedial line strongly bent outwards below costa, almost obsolete to vein 2, then strongly angled inwards in submedian fold and outwards just above vein 1; a slight black streak above terminal part of vein 3, a subterminal streak below vein 2 and one in submedian fold beyond postmedial line; a terminal series of points. Hind wing white tinged with brown, especially on the veins and terminal area; the underside with the costal and terminal areas irrorated with brown.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 1 ♀; U.S.A., Colorado. *Exp.* 50 millim.

2138. Cucullia grisescens. (Plate XCVII. fig. 12.)

Cucullia grisescens, Leech, Trans. Ent. Soc. 1900, p. 99.

♀. Head and thorax purplish grey mixed with dark brown; frons with brown bar above; tegulæ with black line near base; tibiæ with dark streaks; abdomen dark brown. Fore wing purplish grey tinged and irrorated with dark brown; subbasal line represented by a dark striga from costa; a black streak in submedian fold to antemedial line, which is very strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform very indistinctly defined by brown; postmedial line obsolete except from vein 2 to inner margin, where it is strongly angled inwards in submedian fold and outwards on vein 1; a slight dark streak above vein 4. Hind wing reddish brown; cilia pale at tips; the underside greyish irrorated with brown, the veins and terminal area suffused with brown, a dark discoidal lunule.

Hab. W. China, Pu-tsu-fang, 1 ♀ type. *Exp.* 64 millim.

2139. Cucullia celsiæ.

Cucullia celsiæ, Herr.-Schäff. Eur. Schmett. ii. p. 311, Noct. f. 182 (1845); Staud. Cat. Lep. pal. p. 214.

♂. Head and thorax grey mixed with dark brown; tegulæ with blackish line near base, two brown medial lines and brown tips; abdomen ochreous whitish suffused with reddish brown, the dorsal crests black and grey. Fore wing fuscous black suffused with grey, leaving the base and terminal area except towards costa pale; antemedial line dentate, very strongly angled outwards in submedian fold and above inner margin and inwards on vein 1, indistinct on costal half, defined by grey on inner side below submedian fold; stigmata obsolete; postmedial line obsolete towards costa, represented by a double series of points on the pale area and by a whitish lunule in submedian interspace and small lunule above inner margin; the veins towards termen slightly streaked with black; slight oblique black streaks below extremities of veins 6 and 2; cilia white at base, black at tips. Hind wing pale, uniformly suffused with fuscous brown; cilia white at base, fuscous at tips; the underside whitish irrorated with brown, an indistinct discoidal lunule and postmedial line.

Hab. Hungary; Bulgaria; S. Turkey; Palestine, 1 ♂. *Exp.* 32 millim.

Larva. Rebel, Ann. Hofmus. Wien, xviii. p. 230 (1903).

Green with fine whitish dorsal, subdorsal, and stigmatal lines; lateral line broad, the upper half formed by a dark green streak, the lower half whitish. Food-plant, *Hesperis desertorum*.

2140. Cucullia xeranthemi.

Cucullia xeranthemi, Boisd. Ind. Meth. p. 153 (1840); Herr.-Schäff. Schmett. Eur. ii. p. 309, Noct. ff. 195, 481; Frr. Beitr. v. pl. 412. ff. 3-4; Mill. Icones, ii. pl. 89. f. 7; Staud. Cat. Lep. pal. p. 217.

Head and thorax brown mixed with purplish grey; frons with black bar; tegulæ with black line near base and brown medial line; abdomen whitish mixed with brown except at base, the dorsal crests dark. Fore wing violaceous whitish tinged with brown, the veins with fine dark streaks, the interspaces with diffused brown streaks; the subbasal line represented by a slight oblique striga from costa; a slight dark streak below base of cell; antemedial line rather indistinct, double, highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform with reddish-brown centres and grey annuli defined by black, the former rather figure-of-8-shaped, the latter more or less angled inwards on median nervure; the medial part of inner margin with black streak; postmedial line slightly defined by whitish on outer side, bent outwards below costa, angled inwards in submedian fold and to inner margin, some pale points on costa beyond it; the interspaces of terminal area with whitish streaks and black streaks above veins 6 and 4 and below 2; a terminal series of slight black lunules. Hind wing whitish tinged with brown, the veins and

terminal area brown; the underside with the costal area irrorated with brown, a slight discoidal spot, the terminal area brown.

Hab. S. France; S. Germany; Austria; Hungary, Frey Coll.; ?S. Italy; Balkan States; S. Russia, Zeller and Leech Colls.; W. Turkestan, Ferghana, Issyk Kul; W. Siberia, Altai. *Exp.* 44 millim.

Larva. Mill. Icones, ii. p. 373, pl. 89. f. 10.

Pale green; dorsal line pink; subdorsal line pink forming a chain of elliptical marks with greyish centres; a pink lateral stripe defined by white below.

2141. Cucullia montana. (Plate XCVII. fig. 19.)

Cucullia montanæ, Grote, Can. Ent. xiv. p. 175 (1882); Smith, Cat. Noct. N. Am. p. 237.

Head and thorax violaceous grey mixed with some fuscous and tinged in parts with rufous, especially at base and inner side of tegulæ; head darker with black bar on frons; tegulæ with black line near base, two slight medial lines and black tips; patagia with some black scales near upper edge; dorsum of thorax mostly black; tibiæ with black streaks; abdomen grey tinged with brown, the crests black. Fore wing violaceous whitish; the costal area darker except at base; the basal area, end of cell and area beyond it suffused with rufous; the veins with fine dark streaks; a slight streak in submedian fold to the antemedial line, which is indistinct, double, angled outwards in the interspaces, very strongly below cell and above inner margin and inwards on the veins; orbicular and reniform whitish incompletely defined by black and with brown points in centres, each rather constricted at middle and forming figure-of-8-shaped marks; postmedial line bent outwards below costa, obsolete to vein 2, then forming a whitish lunule defined on each side by black and with some blackish suffusion before and beyond it, then bent inwards as a blackish fascia on inner margin to antemedial line; some irregular subterminal rufous streaks in the interspaces and a more prominent oblique streak below extremity of vein 2; a terminal series of black striæ. Hind wing white, the veins and terminal area suffused with brown, especially in female; cilia white, with fine brown line near base except towards tornus.

Hab. Canada, Calgary (*Wolley-Dod*), 1 ♂; U.S.A., Montana, Colorado (*Bruce*), 1 ♀, Denver (*Oslar*), 4 ♂, 1 ♀. *Exp.* 48–54 millim.

2142. Cucullia florea. (Plate XCVII. fig. 20.)

Cucullia florea, Guen. Noct. ii. p. 134 (1852); Smith, Cat. Noct. N. Am. p. 237.

Head and thorax purple-grey mixed with fuscous; frons with black bar; tegulæ with black line near base, two medial lines and brown tips; abdomen pale brownish, the extremity greyer, the dorsal crests dark. Fore wing purple-grey irrorated and suffused

with fuscous, the costal area darker; a black streak on medial part of inner margin; the veins with fine dark streaks; subbasal line represented by an oblique striga from costa; a fine black streak in submedian fold to the antemedial line, which is double, highly angled outwards in the interspaces, especially the submedian, and inwards on the veins; orbicular and reniform moderate, with brown centres and grey annuli incompletely defined by black, each slightly angled inwards on median nervure; postmedial line obsolete except in submedian interspace, where it forms a whitish lunule defined on each side by black and with some diffused black before it; a black streak above middle of vein 4 and an oblique streak below vein 2; some slight whitish streaks in interspaces of terminal area and a terminal series of black striæ. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; the underside with the costal area suffused with brown, a small discoidal spot.

Hab. Canada, Hudson's Bay (*Barnston*), 1 ♀, Alberta, Calgary (*Wolley-Dod*), 2 ♂, 2 ♀; U.S.A., New Hampshire, New York, Trenton Falls (*Doubleday*), 4 ♀ type, New Jersey. *Exp.* 50 millim.

2143. Cucullia elongata.

Callænia elongata, Butl. A. M. N. H. (5) vi. p. 67 (1880); id. Ill. Het. B. M. vi. p. 11, pl. 103. f. 7.
Cucullia albescens, Moore, P. Z. S. 1881, p. 357; Hmpsn. Moths Ind. ii. p. 238; Staud. Cat. Lep. pal. p. 215.
Cucullia atkinsoni, Moore, Lep. Atk. p. 131 (1882).
Cucullia postera, Staud. Rom. Mém. vi. p. 524 (1892).

Head and thorax purplish grey mixed with fuscous; head blacker; tegulæ with black line near base, two slight medial lines and fuscous tips; patagia with their upper edges fuscous, dorsum of thorax mostly fuscous; tibiæ with fuscous streaks; abdomen grey irrorated with brown, the crests dark. Fore wing purplish grey irrorated with brown, the costal area suffused with fuscous, the end of cell and area beyond it with rufous; the veins with fine black streaks; a slight black streak in submedian fold to the antemedial line, which is usually indistinct, double, angled outwards in the interspaces, very strongly below cell and above inner margin and inwards on the veins; orbicular and reniform moderate with rufous centres and grey annuli defined by black, each rather constricted at middle; postmedial line bent outwards below costa, obsolete to vein 2, then forming a whitish lunule defined by black lines and with some fuscous suffusion before it, then retracted as a blackish streak along inner margin to antemedial line; a slight black streak above middle of vein 4 and a prominent oblique streak below extremity of vein 2; a terminal series of black striæ. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown, especially in female.

Hab. W. Siberia, Altai; E. Siberia, Amurland, Ussuri; Tibet, Amdo; Kashmir, Georais Valley (*Leech*), 2 ♂; Punjab, Kulu

(*Hocking*), 2 ♂, 2 ♀, type *albescens*, Simla (*Swinhoe*, *Harford*), 1 ♂, 2 ♀, Murree (*Harford*), 1 ♂, Dalhousie, 1 ♂; Sikhim (*Lidderdale*), 1 ♀ type. *Exp.* 44–56 millim.

2144. Cucullia asteris.

Noctua asteris, Schiff. Wien. Verz. p. 312 (1776); Esp. Schmett. iv. pl. 154. ff. 2, 3; Hübn. Eur. Schmett., Noct. f. 260; Dup. Lép. Fr. vii. pl. 125. f. 1; Curt. Brit. Ent. pl. 45; Steph. Ill. Brit. Ent., Haust. iii. p. 86; Staud. Cat. Lep. pal. p. 215.

Head dark red-brown mixed with grey; frons with black bar; thorax pale violaceous grey tinged with rufous; tegulæ with fine black line near base, two slight medial lines and dark brown tips; patagia edged with dark brown above and with some black scales; dorsum of thorax dark brown; abdomen grey suffused with brown, the crests blackish. Fore wing pale violaceous grey tinged with rufous, the costal area dark rufous; the veins with fine dark streaks; traces of a dark streak in submedian fold to the antemedial line, which is very indistinct, double, angled outwards in the interspaces, very strongly below cell and above inner margin, and inwards on the veins; a slight dark streak representing upper edge of claviform; orbicular and reniform incompletely defined by red-brown and each somewhat constricted at middle; postmedial line obsolete except below vein 2, where it forms a white lunule defined on each side by brown lines and with some rufous suffusion before and beyond it, then retracted as a dark streak along inner margin to antemedial line; a slight dark streak above middle of vein 4 and a prominent oblique streak below extremity of vein 2; some slight pale streaks in interspaces of terminal area; a terminal series of black striæ. Hind wing ochreous white, the veins and terminal area suffused with brown; cilia ochreous at base, white at tips; the underside with the costal area irrorated with brown.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Hungary, D'Emmich Coll.; N. Italy; Scandinavia; Russia, Livonia, Zeller Coll.; W. Siberia, Altai; W. Turkestan, Issyk Kul; E. Turkestan, Ili, Korla; Mongolia, Urga; E. Siberia, Dahuria, Ussuri; Japan, Yokohama (*Pryer*), 1 ♂, 1 ♀; W. China, Pu-tsu-fang, 1 ♀. *Exp.* 48–50 millim.

Larva. Meyr. Brit. Lep. p. 48; Barrett, Lep. Brit. vi. p. 75, pl. 239. f. 1.

Pale yellow-green or purplish pink; dorsal, subdorsal and spiracular lines yellow, black-edged, the subdorsal line sometimes greenish; head pale yellow or pink speckled with black. Food-plants: *Solidago* and *Aster*. 8–9.

2145. Cucullia gnaphalii.

Noctua gnaphalii, Hübn. Eur. Schmett., Noct. ff. 582-3 (1827); Meig. Syst. Besch. iii. p. 196, pl. cxi. f. 11; Dup. Lép. Fr. vii. pl. 125. f. 4; Frr. Neue Beitr. pl. 5; Herr.-Schäff. Eur. Schmett., Noct. ff. 200-1; Staud. Cat. Lep. pal. p. 217.

Head and thorax violaceous grey mixed with brown; frons with

black bar above; tegulæ red-brown at base defined by a black line and two brown lines near tips; abdomen brown, pale at base and irrorated with grey towards extremity, the dorsal crests dark. Fore wing violaceous grey tinged with red-brown especially on medial area; the veins with fine dark streaks; subbasal line represented by a slight striga from costa; a black streak below base of cell; antemedial line rather indistinct, double, highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform with brown centres and grey annuli defined by black, the former elliptical, the latter slightly angled inwards on median nervure; a black streak on medial part of inner margin; postmedial line bent outwards below costa, obsolete at middle, angled inwards in submedian fold and to inner margin, some pale points beyond it on costa; the terminal area with short black streaks above veins 6 and 4 and below 2; a terminal series of black striæ. Hind wing reddish brown, the interspaces of basal half paler: cilia white at tips; the underside with the interspaces of basal half white, a discoidal point.

Hab. Britain; France; Germany, Zeller Coll.; Switzerland, Leech Coll.; N. Italy; Russia, Livonia, Zeller Coll., Finland, Odessa; Armenia; W. Siberia, Altai. *Exp.* 42 millim.

Larva. Meyr. Brit. Lep. p. 47; Barrett, Lep. Brit. vi. p. 79, pl. 239. f. 2.

Bright green; dorsal stripe broad, purplish brown with darker markings; spiracles yellow on purple-reddish marks; head bluish green. Food-plants: *Solidago*, *Artemisia*. 8–9.

2146. Cucullia brevipennis. (Plate XCVII. fig. 21.)

Cucullia brevipennis, Hmpsn. Moths Ind. ii. p. 239 (1894).

Head and thorax grey mixed with brown; tegulæ with black line near base, two fine brown medial lines and brown tips; patagia with some black scales near upper edge; abdomen grey dorsally tinged with brown, the crests dark. Fore wing grey with a violaceous tinge and slight brown irroration; the costal area suffused with fuscous; subbasal line represented by a very oblique black striga from costa defined by grey on outer side; antemedial line indistinctly double filled in with grey, very strongly dentate inwards on the veins and outwards in interspaces; claviform hardly traceable; orbicular and reniform grey defined by black and with slight brown centres, the former small, round, touching the antemedial line, the latter incompletely defined; medial shade highly curved, obsolete at middle, strong towards costa and inner margin; postmedial line defined by whitish on outer side, indistinct except on inner area, dentate, bent outwards below costa, excurved to vein 4, then oblique and incurved at submedian fold, some white points beyond it on costa; the terminal area with the veins slightly streaked with black and with black streaks above veins 7, 6, 4, 1, the 3rd extending to lower angle of cell and the last extending to termen and with some reddish brown below it; a brown shade from termen below apex; a terminal series of black lunules and

fine pale line at base of cilia. Hind wing whitish tinged with brown, the veins and terminal half suffused with brown, most strongly in female; the underside with the costal and terminal areas irrorated with brown, a small discoidal spot.

Hab. Punjab, Sabathu (*Harford*), 1 ♂, 2 ♀ type; Sikhim, 1 ♂; Assam, Nagas. *Exp.* 38–46 millim.

*2147. Cucullia lilacina. (Plate XCVIII. fig. 1.)

Cucullia lilacina, Schaus, J. N.Y. Ent. Soc. vi. p. 116 (1898).

♂. Head and thorax violaceous grey mixed with brown; frons and vertex of head with blackish bars; tegulæ with black line near base, brown medial line and brown tips; patagia edged with black; dorsum of thorax black; tibiæ striped with black, the pectus clothed with pale rufous hair; abdomen pale ochreous brown, greyish at extremity, the crests large and black. Fore wing violaceous grey irrorated with brown; the base suffused with red-brown; a black streak on inner margin from near base to postmedial line; the area beyond the cell suffused with rufous; the antemedial line represented by an extremely long tooth in submedian interspace; an oblique black striga in cell before the orbicular, which is small, round, tinged with rufous and defined by black, incompletely below; reniform incompletely defined by brown; a black shade between the stigmata from costa to median nervure; postmedial line represented by double oblique striæ filled in with white from costa and by a white lunule defined by brown lines and with some fuscous suffusion before it in submedian interspace, then retracted to inner margin; the veins of terminal area with dark streaks; costa towards apex black with some white points on it; an oblique black streak below extremity of vein 2. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; the underside with the costal area irrorated with brown.

Hab. Mexico, Orizaba, type † ♂ in Coll. Schaus. *Exp.* 44 millim.

*2148. Cucullia agua.

Cucullia agua, Barnes, Can. Ent. xxxvi. p. 203 (1904).

♂. Clear, bluish grey; head dark, black and grey mixed; palpi blackish at sides; tegulæ pale brown largely mixed with grey, black-brown at base and with black-brown medial streak, a medial brown line edged with white in front; patagia grey edged with blackish; abdomen fuscous, the dorsal crests blackish; pectus and ventral surface of abdomen pale yellow-brown; legs greyish on outer side, the tarsi darker. Fore wing with the markings pale reddish to dark brown and black, the base dark brown with a small white spot below costa, the inner margin with a black-brown fascia; antemedial line with blackish spot below costa, then almost obsolete, strongly angled outwards in submedian interspace; orbicular small, round, brown slightly defined by black; reniform defined by dark

brown, incompletely on inner side; a diffused medial shade from costa to median nervure, then indistinct; postmedial line obsolete except for a pale lunule in submedian interspace interrupting a dark streak ending on termen below vein 2; the end of cell and costal area from it to apex suffused with reddish brown, leaving the costa narrowly grey with some white points on it with oblique dark striæ between them; a terminal series of dark striæ; cilia pale at base. Hind wing white tinged with fuscous, the veins and terminal area suffused with fuscous; cilia white; the underside dirty white, the costal and terminal areas darker.

♀. Fore wing darker and more suffused with black-brown; the medial shade darker, the orbicular and reniform darker with brown centres; hind wing darker.

Hab. U.S.A., Arizona, Huachuca Mts. *Exp.*, ♂ 44, ♀ 46 millim. This species is unknown to me; it may be the same as *S. lilacina*, Schaus.

*2149. Cucullia bistriga. (Plate XCVIII. fig. 20.)

Cucullia bistriga, Smith, Proc. U.S. Nat. Mus. xv. p. 48 (1892); id. Cat. Noct. N. Am. p. 238.

♂. Bluish grey; frons with some black scales; tegulæ with a black line near base and brownish line near tips; patagia with dusky line near margin; metathoracic crest brown. Fore wing with slight dark streaks on the veins, the costal area with dark suffusion, the terminal area with short black streaks in the interspaces; antemedial line single, dark, strongly angled outwards in and below cell and above inner margin; a black streak on inner margin from base to postmedial line, another in submedian fold from antemedial line to beyond middle, then bent upwards to termen below vein 3; orbicular absent; reniform moderate, indistinct, dusky; postmedial line single, blackish, bent outwards below costa, excurved to vein 4, then oblique; a slight oblique shade from termen below apex. Hind wing whitish with dark suffusion on terminal area; cilia whitish; the underside grey-white with darker irroration.

Hab. U.S.A., Colorado. *Exp.* 35 millim. This species is unknown to me; figured from a drawing from type in U.S. Nat. Mus.

2150. Cucullia asteroides. (Plate XCVIII. fig. 2.)

Cucullia asteroides, Guen. Noct. ii. p. 133 (1852); Smith, Cat. Noct. N. Am. p. 237.

Head fuscous brown mixed with some grey, thorax purplish grey; the tegulæ with black line near base, two slight medial lines and brown tips; patagia with some black scales near upper edge; dorsum of thorax dark brown with the metathoracic crest black; tibiæ with dark streaks; abdomen whitish at base, greyish at extremity, dorsally tinged with ochreous and irrorated with brown, the crests dark.

Fore wing pale purplish grey; the costal area suffused with fuscous, the cell and area beyond it with rufous; the veins with fine dark streaks; a fine black streak in submedian fold to the antemedial line, which is indistinctly double, very highly angled outwards in the interspaces, especially the submedian, and inwards on the veins; orbicular and reniform represented by dark points on their edges, the latter with curved streak below end of cell representing its lower edge; postmedial line obsolete except below vein 2, where it forms a whitish lunule defined on each side by fine black lines, then bent inwards along inner margin to antemedial line, some rufous before it in submedian interspace; slight whitish streaks in interspaces of terminal area towards apex and two oblique dark streaks in submedian interspace, some black striæ on termen. Hind wing white, the veins and termen tinged with fuscous, in female the whole terminal area suffused with fuscous.

Hab. Canada (*Norman*), 1 ♂; U.S.A., E. States to Virginia and Nebraska, Massachusetts, Buffalo (*Packard*), 2 ♂; New York, 6 ♂, 2 ♀ type, Illinois, 1 ♀. *Exp.* 50–58 millim.

Larva. Head rounded, green with paler reticulations. Body cylindrical, uniform, green; dorsal line moderate, yellow, black-edged; subdorsal and lateral lines yellow-green, black-edged; supra-stigmatal line black-edged, its lower edge a row of dashes, below which is the yellow substigmatal line margined beneath with white. Feet green.—H. G. D.

2151. Cucullia postera. (Plate XCVIII. fig. 3.)

Cucullia postera, Guen. Noct. ii. p. 133 (1852); Smith, Cat. Noct. N. Am. p. 237.

♀. Head and thorax purplish grey mixed with fuscous brown; frons with black bar; tegulæ with black line near base, two slight medial lines and brown tips; patagia with some black scales near upper edge; metathoracic crest tipped with black; tibiæ with black streaks; abdomen whitish dorsally tinged with ochreous and irrorated with brown, the crests black. Fore wing purplish grey slightly tinged with brown, the costal area darker, the end of cell and area beyond it suffused slightly with rufous; subbasal line represented by a slight oblique striga from costa; a slight black streak in submedian fold to the antemedial line, which is indistinctly double, very highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform moderate, with slight rufous centres and greyish annuli incompletely defined by black, both somewhat constricted at middle; postmedial line obsolete except from vein 2 to inner margin, where it forms a whitish lunule defined on each side by black lines and with some fuscous suffusion before it, then bent inwards as black streaks along inner margin to the antemedial line; a blackish streak above medial part of vein 4 and an oblique streak below terminal part of vein 2; some whitish streaks in interspaces of terminal area; a terminal series of black

striæ. Hind wing white tinged with brown, the veins and terminal area suffused with brown.

Hab. U.S.A., New Hampshire, New York (*Doubleday, W. W. Hill*), 3 ♀ type, New Jersey. *Exp.* 46–54 millim.

*2152. Cucullia ledereri.

Cucullia ledereri, Staud. Rom. Mém. vi. p. 525 (1892); id. Cat. Lep. pal. p. 215.

Differs from *C. postera* in the costa of fore wing being slightly instead of strongly suffused with brown; the streak on inner margin blacker; the orbicular defined by two dark points, the reniform by three minute striæ in centre; the black-edged white lunule on postmedial line in submedian interspace further from the oblique black streak below extremity of vein 2.

Hab. Kamtschatka. *Exp.*? This species is unknown to me.

*2153. Cucullia indicta.

Cucullia indicta, Smith, Can. Ent. xxxvi. p. 154 (1904).

Bluish grey; head smoky brown; tegulæ fuscous at base and with blackish medial line; dorsum of thorax fuscous; abdomen with the crests fuscous. Fore wing almost uniform in colour; antemedial line hardly traceable, highly dentate; orbicular and reniform defined with slight brownish centres and greyish annuli incompletely defined by black, both somewhat constricted at middle; a black streak on inner margin before the postmedial line, which is obsolete except for a double curved line in submedian interspace, followed by a pale line with a black-brown streak from it to termen below vein 2; a terminal series of black striæ, Hind wing dull yellowish white, the terminal area suffused with fuscous; cilia white; the underside white, the costal and terminal areas suffused with fuscous.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*). *Exp.*, ♂ 45, ♀ 52 millim. This species is unknown to me.

2154. Cucullia obscurior. (Plate XCVIII. fig. 4.)

Cucullia obscurior, Smith, Pr. U.S. Nat. Mus. xv. p. 41 (1892); id. Cat. Noct. N. Am. p. 237.

♀. Head and thorax purplish grey mixed with dark brown; frons with black bar; tegulæ with black line near base, two slight medial lines and brown tips; patagia with some black scales near upper edge; metathorax with the crest tipped with black; abdomen greyish tinged with ochreous and irrorated with brown, the crests dark. Fore wing purplish grey irrorated with fuscous; a slight black streak in submedian fold to the antemedial line, which is indistinct, double, very highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform moderate,

incompletely defined by black and with black points round their centres, both somewhat constricted at middle; postmedial line double and bent outwards below costa, obsolete to vein 2, then represented by a grey lunule defined on each side by black lines and with slight fuscous suffusion before it, then bent inwards as a black streak on inner margin to the antemedial line; a slight black streak above medial part of vein 4, and a strong oblique streak below extremity of vein 2; a series of slight black terminal lunules. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; cilia white; the underside white, the costal and terminal areas irrorated with brown.

Hab. U.S.A., Colorado, Glenwood Springs, 3 ♀. *Exp.* 48–50 millim.

2155. Cucullia similaris. (Plate XCVIII. fig. 5.)

Cucullia similaris, Smith, Pr. U.S. Nat. Mus. xv. p. 41 (1892); id. Cat. Noct. N. Am. p. 237.

Head and thorax blue-grey mixed with some fuscous; frons with black bar; tegulæ with black line near base, two slight medial lines and dark tips; patagia with some black scales near upper edge; dorsum of thorax mostly black; tegulæ streaked with black; abdomen brownish grey, the crests black. Fore wing blue-grey irrorated with fuscous, the costal area rather darker towards apex, the veins with fine black streaks; subbasal line represented by a slight oblique striga from costa; a slight black streak in submedian fold to the antemedial line, which is indistinctly double and very strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform incompletely defined by black and with black points round centres, the former somewhat constricted at middle, the latter slightly angled inwards on median nervure; postmedial line double and bent outwards below costa, obsolete to vein 2, then forming a whitish lunule defined on each side by black lines and with some fuscous suffusion before it, then bent inwards as a black fascia on inner margin to antemedial line; slight black streaks above middle of veins 6, 5, 4, and a prominent oblique streak below extremity of vein 2, with a short streak below its origin in submedian fold; a terminal series of small black lunules. Hind wing white slightly tinged with brown, the veins and terminal area suffused with brown, especially in female.

Hab. U.S.A., Colorado, Denver, 1 ♂, Durango (*Oslar*), 1 ♂, 2 ♀. *Exp.*, ♂ 46, ♀ 52 millim.

*2156. Cucullia arizona. (Plate XCVIII. fig. 6.)

Cucullia arizona, Smith, J. N.Y. Ent. Soc. xiii. p. 206 (1905).

♀. Dark bluish grey, the markings fuscous black, distinct; head black-brown with transverse black and grey lines; tegulæ grey with three blackish and two white lines; thorax dorsally irrorated with

black. Fore wing with pale grey shade from middle of costa to termen below apex, defined by fuscous below becoming black towards termen, the area above it darker; a black fascia on inner margin expanding beyond middle and filling submedian interspace; a fine black streak in base of submedian fold; antemedial line represented by a long black tooth in submedian interspace; orbicular and reniform only defined by black points; postmedial line represented by a fine grey lunule in submedian interspace. Hind wing whitish at base, the veins and terminal area broadly suffused with blackish; cilia white.

Hab. U.S.A., Arizona, Cochise Co. *Exp.* 45 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2157. Cucullia perstrigata, n. n. (Plate XCVIII. fig. 7.)

Cucullia strigata, Schaus, J. N.Y. Ent. Soc. vi. p. 116 (1898), nec Smith, 1892.

Head and thorax violaceous grey mixed with brown; head blackish; tegulæ tinged with fuscous, a brown line near base, slight medial line and brown tips; patagia with some black scales near upper edge; dorsum of thorax blackish; tibiæ with black stripes; abdomen grey, the crests dark. Fore wing violaceous grey irrorated with white; a black streak in submedian fold to the antemedial line, which is very indistinct, highly angled outwards in the interspaces, especially the submedian, and inwards on the veins; claviform represented by a slight black streak on its upper edge; the end of cell and area beyond it pale tinged with rufous; orbicular and reniform defined by some dark points, the latter with curved streak below end of cell representing its lower edge; a black streak above median nervure and vein 4 from antemedial line to near termen; an oblique streak from middle of costa to upper angle of cell; postmedial line represented by a pale streak from costa to termen above vein 6 and by a pale lunule defined by brown lines between veins 2 and 1, then strongly retracted to inner margin, the medial area with oblique dark fascia on inner margin; some pale points on costa towards apex; black streaks above veins 7, 6, and terminal part of 5, and an oblique streak below extremity of vein 2. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; cilia white at tips; the underside with the costal and terminal areas irrorated with brown.

Hab. Mexico, Jalapa, 1 ♀, type † ♂ in Coll. Schaus. *Exp.* 46 millim.

2158. Cucullia convexipennis. (Plate XCVIII. fig. 8.)

Cucullia convexipennis, Grote & Rob. Trans. Am. Ent. Soc. ii. p. 201, pl. iii. f. 76 (1868); Smith, Cat. Noct. N. Am. p. 236.

Head and thorax whitish mixed with ochreous brown; frons with two black bars. Vertex of head with brown bar; tegulæ

with black line near base, two slight rufous medial lines and rufous tips; patagia with the upper edge rufous, dorsum of thorax rufous; tibiæ with black streaks; abdomen whitish tinged with rufous, the dorsal crests very large and thick, formed of rufous scales. Fore wing violaceous grey, the area from middle of costa through end of cell to near termen tinged with ochreous, the area beyond and above it and the inner area towards tornus suffused with rufous; subbasal line represented by a slight oblique striga from costa; a brown streak in submedian fold to the antemedial line, which is very indistinct, angled outwards in the interspaces, very strongly below cell and above inner margin, and inwards on the veins, a dark streak beyond it representing upper edge of claviform; orbicular represented by two dark points, the reniform by traces of its upper edge; the veins of terminal half with dark streaks; postmedial line represented by two oblique brown striæ from costa with a white streak above latter from costa to termen at vein 7, some whitish streaks in interspaces below costa towards apex, below vein 2 the postmedial line forms a whitish lunule defined on each side by brown, then bent inwards as a dark fascia on inner margin to antemedial line; a slight dark streak above middle of vein 4 and a prominent oblique streak below extremity of vein 2; the extremity of some of the veins defined by slight white streaks. Hind wing yellowish white, the veins and terminal area suffused with reddish brown, especially in female.

Hab. Canada; U.S.A., New York, Evans Centre, 2 ♂, 3 ♀, Pennsylvania, New Jersey, 1 ♀, Delaware, Ohio. *Exp.* 46–52 millim.

Larva. Head rounded, shining black; sutures of clypeus and a dot in its centre, a spot behind and one above eyes pale yellow. Body with a low dorsal hump on joint 12, which with joint 13 is black; forward of this a dorsal red line becoming yellow on joint 2; four fine yellow subdorsal lines; a broad yellow lateral line, vertically cut with black into four spots on each segment, the most anterior one partly divided on the lower side; a dark red stripe on a black ground subventrally; nine yellow ventral lines, the central ones wider than the marginal. Feet black.—H. G. D.

2159. Cucullia stigmatophora. (Plate XCVIII. fig. 9.)

Cucullia stigmatophora, Hmpsn. Moths Ind. ii. p. 239 (1894).

Head and thorax ochreous white mixed with rufous; tegulæ with blackish line near base, three slight rufous medial lines and dark rufous tips; thorax with the scales of dorsal crest tipped with black; abdomen ochreous whitish mixed with brown and tinged with rufous, the crests dark. Fore wing whitish suffused with rufous, the costal area suffused with fuscous; antemedial line angled outwards in cell, obsolete to submedian fold, then double, strongly angled inwards on vein 1 and outwards above inner margin; orbicular and reniform very indistinct, pale, with two

slight brown streaks between them in discal fold; the inner margin dark brown on medial area; postmedial line obsolete except below vein 2, where it forms a whitish lunule defined on each side by brown and with some brown suffusion before it in submedian fold, and a similar smaller lunule above inner margin; an oblique series of brown streaks between vein 6 and apex, a slight streak above middle of vein 4 and a prominent oblique streak below vein 2, with some fine white and brown streaks below it; cilia white at base, red-brown at tips. Hind wing pale, uniformly suffused with red-brown; cilia white at base, red-brown at tips; the underside paler with slight discoidal lunule.

Hab. E. Turkestan, Kuldja, ♂ in Coll. Püngeler. Punjab, Simla (*Harford*), 1 ♀ type. *Exp.* 44 millim.

2160. Cucullia scrophulariphaga.

Cucullia scrophulariphaga, Rmbr. Ann. Soc. Ent. Fr. 1833, p. 20, pl. 1. f. 4; Dup. Lép. Fr., Suppl. iii. p. 409, pl. 36. f. 5; Staud. Cat. Lep. pal. p. 215.

Head and thorax grey tinged with brown; frons with two brown bars, back of head dark brown; tegulæ with blackish line near base, two slight medial lines and dark brown tips; patagia with some black scales near upper edge which is brown; dorsum of thorax dark brown; abdomen grey tinged with brown, the dorsal crests dark. Fore wing grey tinged with brown, the cell and area beyond it with rufous, some whitish suffusion from medial area below cell to middle of termen, the costal area rather darker towards apex; a slight brown streak in submedian fold to the antemedial line, which is pale brown defined by white on inner side, very highly angled outwards in the interspaces and inwards on the veins; orbicular and reniform defined by dark points on their edges; postmedial line bent outwards below costa, very indistinct to vein 2, then forming a white lunule defined on each side by brown, and a smaller lunule above inner margin; an oblique black streak above inner margin on medial area; an oblique series of slight brown streaks from vein 6 to apex, and some others from termen below apex to vein 4; a prominent oblique streak from termen above vein 3 to postmedial line in submedian fold, with some slight brown and white streaks below it; cilia blackish and white at base, grey at tips. Hind wing whitish suffused with brown, especially on the veins and terminal area; cilia whitish with a brown line through them; the underside whiter, the costal area irrorated with brown, the terminal area suffused with brown, a discoidal lunule.

Hab. Corsica, Leech Coll. *Exp.* 42–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 255.

Almost exactly like that of *C. blattariæ*, with four black spots on back of each segment arranged in a St. Andrew's cross, the outer ones touching a yellow subdorsal line.

*2161. Cucullia scrophulariphila. (Plate XCVIII. fig. 10.)

Cucullia scrophulariphila, Staud. Stett. ent. Zeit. 1859, p. 215; id. Cat. Lep. pal. p. 214.

♂. Palpi rufous with blackish streak and the 3rd joint blackish; head red-brown, the vertex with semicircular white mark in front; tegulæ and patagia brownish grey, the former with white band before the tips which are dark brown, the latter with white fascia near upper edge which is dark brown, and some black scales below it; vertex of thorax black-brown; pectus clothed with pale yellow and rufous hair; the mid and hind tibiæ brown above, yellowish below, with black points near extremity and at base of spurs; abdomen whitish suffused with pale reddish brown, the crests blackish. Fore wing pale grey-brown, the costal area rather darker and suffused with grey, the basal inner area whitish; a slight dark streak in base of submedian fold; antemedial line indistinct, double, very strongly angled outwards in the interspaces and inwards on the veins, the tooth above inner margin forming a blackish streak to postmedial line, a white patch beyond the tooth in submedian fold before the postmedial line; orbicular and reniform only defined by dark points on their margins; postmedial line almost obsolete except below vein 2, where it is double, forming oblique lunules filled in with white in submedian interspace and above inner margin; indistinct wedge-shaped brown streaks from termen above veins 7, 6, 5; an oblique wedge-shaped black-brown fascia from termen just above vein 3 to postmedial line at submedian fold, with diffused white fascia above it and slight white streak below it; cilia grey-brown with a dark line near base. Hind wing dark brown, the cell and inner area yellowish white, the veins dark brown; cilia brownish white with a dark line through them except towards tornus; the underside white, the costal and terminal areas to vein 2 irrorated with brown, a dark discoidal lunule.

♀. Hind wing brown, the inner area only yellowish white.

Hab. Spain, Andalusia, Chiclana, in Coll. Püngeler; ? Algeria. *Exp.* 40–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 255; Hffm. Raup. p. 126.

Like *C. verbasci*, head broader, spots more confluent. Food-plant, *Scrophularia sambucifolia*. 3–5.

2162. Cucullia blattariæ.

Noctua blattariæ, Esp. Schmett. iv. pl. 154. f. 4 (1786); Frr. Beitr. pl. 81; Herr.-Schäff. Eur. Schmett., Noct. ff. 202-3; Staud. Cat. Lep. pal. p. 215.
Cucullia caninæ, Rmbr. Ann. Soc. Ent. Fr. 1833, p. 19, pl. 1. f. 5; Dup. Lép. Fr., Suppl. iii. p. 415, pl. 37. f. 2.
Cucullia scrophularivora, Guen. Noct. ii. p. 130 (1852).

Head and thorax whitish tinged with rufous; palpi, two bars on frons, and back of head dark rufous; tegulæ with blackish line near base, traces of a medial line and dark rufous tips; patagia with

some black scales towards upper edge which is dark rufous, thorax dorsally blackish; mid and hind tibiæ with black points at their extremities; abdomen whitish tinged with red-brown, the crests dark. Fore wing grey-white, more or less suffused with rufous, leaving the inner half paler; the costal area darker; subbasal line represented by an oblique striga from costa; antemedial line double below submedian fold, angled strongly outwards in the interspaces and inwards on the veins, above inner margin angled outwards to postmedial line, its outer part forming a black streak; postmedial line obsolete except below vein 2, where it forms a whitish lunule defined on each side by brown lines, and with a smaller lunule below it above inner margin; some whitish points on costa towards apex; an oblique series of slight rufous streaks between vein 6 and apex, and another series from termen below apex to vein 4, a prominent oblique streak below vein 2 with slight white and brown streaks below it; cilia blackish at base, grey at tips, and intersected with white. Hind wing tinged with brown, the veins and terminal area suffused with brown, in female mostly suffused with brown; cilia whitish with a brown line through them; the underside with slight discoidal lunule.

Hab. W. France, Leech Coll.; Germany; Austria, Zeller and Leech Colls.; Hungary, Leech Coll.; Spain; Corsica, Leech Coll.; Dalmatia, Frey and Leech Colls.; S. Russia, Leech Coll.; Armenia; Asia Minor, Pontus, Lydia, Taurus, Mardin; Syria, Beyrout (*Jessop*), 1 ♀; Kashmir (*Pilcher*), 1 ♀. *Exp.* 44–52 millim.

Larva. Kirby, Butt. & Moths Eur. i. p. 256.

Citron-yellow above with black spots often conjoined into the form of a cross; sides grey dotted with black; head brown or red. Food-plants: the flowers and seeds of different species of *Scrophularia*. 6–7.

2163. Cucullia thapsiphaga.

Cucullia thapsiphaga, Treit. Schmett. v. 3, p. 120 (1826); Rmbr. Ann. Soc. Ent. Fr. 1833, p. 22, pl. 1. f. 2; Frr. Beitr. pl. 80; Staud. Cat. Lep. pal. p. 214.

Head and thorax whitish tinged with pale rufous and violaceous; frons with two dark brown bars, vertex of head with some brown; tegulæ tinged with rufous at middle, a blackish line near base, two slight medial lines and dark brown tips; patagia with some blackish scales towards upper edge which is red-brown; thorax dorsally dark brown; abdomen greyish suffused with brown, the crests dark. Fore wing grey tinged with rufous, especially in and beyond end of cell, some whitish suffusion from medial area below cell to middle of termen, the costal area rather darker; a slight brown streak in submedian fold to the antemedial line, which is pale brown, strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform defined by some black points; postmedial line bent outwards below costa, almost obsolete to vein 2, then

represented by a whitish lunule defined on each side by brown and a smaller lunule above inner margin ; an oblique black streak above inner margin on medial area ; an oblique series of rufous streaks between vein 6 and apex, and some others from termen below apex to vein 4 ; a prominent oblique fascia from termen above vein 3 to postmedial line at submedian fold, with some slight brown and white streaks below it ; cilia grey with dark line through them intersected with white. Hind wing yellowish white, the veins and terminal area suffused with brown ; cilia brown at base, white at tips ; the underside with slight discoidal lunule.

Hab. France, Frey and Leech Colls. ; Germany, Zeller and Frey Colls. ; Austria ; Hungary ; Switzerland ; Spain, Leech Coll., Catalonia ; Corsica ; Italy ; Dalmatia, Leech Coll. ; S. Russia ; Armenia. *Exp.* 38–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 255.

Bluish white with dorsal and lateral broad pale yellow stripes and usually small bluish spots between them. Food-plant, leaves and flowers of mullein. 6–8.

2164. Cucullia anceps. (Plate XCVIII. fig. 11.)

Cucullia anceps, Staud. Hor. Soc. Ent. Ross. xvi. p. 78 (1881) ; id. Cat. Lep. pal. p. 215.

♂. Head white, the palpi at sides, a bar on frons, and the back of head rufous ; tegulæ and patagia white, the former with dark line near base, two medial lines and dark tips, the latter with a few black scales and brown upper edge ; dorsal ridge black and grey ; tibiæ with some grey ; abdomen ochreous white irrorated with brown, the dorsal crests dark. Fore wing white, the costal area suffused with grey, the cell and area beyond it tinged with ochreous ; a slight brown streak below base of cell and streak on median nervure ; subbasal line represented by a pale oblique striga from costa ; antemedial line very indistinct, defined by whitish on inner side, angled outwards below costa and strongly below cell and above inner margin, where it is represented by oblique dark brown streaks ; orbicular and reniform only defined by dark points below them and beyond the latter ; postmedial line almost obsolete except below vein 2, where it forms a whitish lunule defined on each side by brown and smaller lunule above inner margin ; some white points on costa towards apex ; brown streaks above bases of veins 7, 6, and an oblique series from termen below apex to lower angle of cell ; a prominent oblique streak from termen above vein 3 to postmedial line in submedian fold ; cilia with blackish line through them. Hind wing whitish, the veins and terminal area tinged with brown, the inner area with ochreous ; cilia with a brown line through them.

Hab. Armenia, 1 ♂ ; Asia Minor, Pontus, Taurus ; Syria, Mardin ; Persia ; W. Turkestan, Sarawschan ; E. Turkestan, Ili. *Exp.* 42 millim.

2165. Cucullia lychnitis.

Cucullia lychnitis, Rmbr. Ann. Soc. Ent. Fr. 1833, p. 17, pl. 1. f. 3; Dup. Lép. Fr., Suppl. iii. pl. 36. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 204; Staud. Cat. Lep. pal. p. 214.
Cucullia rivulorum, Guen. Noct. ii. p. 129 (1852).

Head pale rufous, the frons and vertex of head with dark rufous bars; tegulæ violaceous grey tinged with rufous at middle, a black line near base, traces of two medial lines and dark brown tips; patagia with some black scales near upper edge which is rufous; dorsum of thorax dark brown; mid and hind tibiæ at extremity and 1st joint of tarsus with black spots; abdomen grey tinged with brown, the crests dark. Fore wing whitish suffused with pale rufous, the costal area dark, tinged with grey; traces of a brown streak in submedian fold to the antemedial line, which is very indistinct, double, highly angled outwards in the interspaces and inwards on the veins, its outer part forming an oblique black streak above inner margin; orbicular and reniform defined by slight black points on their edges; postmedial line bent outwards below costa, obsolete to vein 2, then represented by two whitish lunules defined on each side by brown; an oblique series of slight brown streaks from apex to vein 6 and another from termen below apex to vein 4; a prominent oblique fascia from termen above vein 3 to postmedial line in submedian fold, with slight white and brown streaks below it; cilia with blackish line through them intersected with white. Hind wing yellowish white, the veins and termen suffused with brown, especially in female; cilia pale with a brown line through them; the underside whiter, the costal and terminal areas irrorated with brown.

Hab. Britain (*Leech*, *Barrett*); France, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Switzerland, Zermatt (*Murray*); Spain, Bilbao, Castille; Corsica; Sardinia; Italy; S. Russia; Armenia; Asia Minor, Pontus, Lydia. *Exp.* 42–48 millim.

Larva. Boisd. Rmbr. & Grasl. Chen. Ic. pl. 15. ff. 1–2; Meyr. Brit. Lep, p. 49; Barrett, Lep. Brit. vi. p. 71, pl. 238. f. 3.

Greenish white with a pale yellowish band on each segment; a dorsal series of curved black bars alternating with rows of four black spots; a spiracular series of black spots. Food-plants: *Verbascum* and *Lychnis*. 7–8.

Var. *rivulorum*. More elongate than *lychnitis*, greener and without the yellow variety, the black markings slighter and tending to form a single band; the incisions concolorous. Food-plant, *Scrophularia*. 7.

2166. Cucullia scrophulariæ.

Noctua scrophulariæ, Schiff. Wien. Verz. p. 312 (1776); Capieux, Naturf. xxiv. p. 91, pl. 3. ff. 1–4 (1789); Esp. Schmett. iv. pl. 180. f. 4; Hubn. Eur. Schmett., Noct. f. 267; Rmbr. Ann. Soc. Ent. Fr. 1833, p. 14. pl. 1. f. 1; Dup. Lép. Fr., Suppl. vii. pl. 124. f. 3; Steph. Ill. Brit. Ent., Haust. iii. p. 85; Staud. Cat. Lep. pal. p. 214.

Head and thorax whitish tinged with pale rufous; frons and vertex of head with rufous bars; tegulæ with slight line near base, traces of medial line and rufous tips; patagia with some brown scales towards upper edge which is rufous; dorsum of thorax dark brown; mid and hind tibiæ at extremity and 1st joint of tarsus with black spots; abdomen whitish tinged with brown, the crests dark. Fore wing whitish suffused with pale rufous; the costal area dark irrorated with grey; a slight brown streak in submedian fold to the antemedial line, which is very indistinct, double, highly angled outwards in the interspaces and inwards on the veins, its outer edge forming an oblique black streak above medial part of inner margin; orbicular and reniform represented by some brown points on their edges; postmedial line bent outwards below costa, obsolete to vein 2, then forming two pale lunules defined on each side by brown; an oblique series of slight brown streaks from apex to vein 6 and another from termen below apex to vein 4; a prominent oblique fascia from termen above vein 3 to postmedial line in submedian fold with slight brown and white streaks below it; cilia with blackish line through them intersected with white. Hind wing yellowish white, the veins and terminal area suffused with brown; cilia whitish with brown line through them; the underside with the costal and terminal areas irrorated with brown.

Hab. Britain; France; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland, Frey Coll.; Corsica; N. Italy; Dalmatia, Leech Coll.; Scandinavia; Finland, Leech Coll.; Russia, Livonia, Zeller Coll.; S. Russia, Leech Coll.; Armenia; ? Asia Minor, Pontus; ? Syria. *Exp.* 42–48 millim.

Larva. Meyr. Brit. Lep. p. 48; Barrett, Lep. Brit. vi. p. 68, pl. 238. f. 2.

Bluish white with a yellow band on each segment; a dorsal series of black bars alternating with pairs of black spots; a spiracular series of yellow spots and black marks; head yellow spotted with black. Food-plants: *Scrophularia*, especially *S. nodosa*, and *Verbascum*. 6–7.

2167. Cucullia verbasci.

Noctua verbasci, Linn. Syst. Nat. x. p. 515 (1758); Esp. Schmett. iv. pl. 139. ff. 1–4; Hübn. Eur. Schmett., Noct. f. 266; Dup. Lép. Fr. vii. p. 392, pl. 124, ff. 1, 2; Steph. Ill. Brit. Ent., Haust. iii. p. 85; Rmbr. Ann. Soc. Ent. Fr. ii. p. 9, pl. 1. f. 6; Staud. Cat. Lep. pal. p. 214.

Head and thorax whitish tinged with rufous; frons and vertex of head with red-brown bars; tegulæ with slight line near base, two faint medial lines and red-brown tips; patagia with some black scales near upper edge which is whitish tipped with red-brown; dorsum of thorax dark brown; pectus and legs clothed with yellow hair, the mid and hind tibiæ fringed with rufous hair on outer side and with brown spots at extremity; abdomen yellowish suffused with red-brown, especially in female, the crests dark. Fore wing yellowish suffused with rufous, the costal area

dark rufous; a slight brown streak in submedian fold to the antemedial line, which is double, highly angled outwards in the interspaces and inwards on the veins, indistinct except below vein 1; the inner medial area suffused with rufous; orbicular and reniform defined by some dark points on their edges; postmedial line obsolete except below vein 2, where it forms two whitish lunules defined on each side by red-brown; an oblique series of rufous streaks from apex to vein 6 and others from termen below apex to vein 4; the terminal area towards tornus from vein 4 obliquely to lunules of postmedial line red-brown with some slight whitish streaks on it: cilia strongly crenulate and intersected with white, with fine pale line at base, then blackish and brown at tips. Hind wing yellowish tinged with red-brown, the veins and terminal area suffused with brown; in female dark reddish brown, the basal and inner areas paler; the underside with the costal and terminal areas irrorated or suffused with brown, a small discoidal lunule.

Hab. Britain, Leech Coll.; France, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Switzerland, Frey Coll.; ? Algeria; S. Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus, Bithynia, Lydia; Syria, Beyrout (*Jessop*), 1 ♂; E. Siberia, Ussuri. *Exp.* 48–54 millim.

Larva. Meyr. Brit. Lep. p. 49; Barrett, Lep. Brit. vi. p. 64, pl. 238. f. 1.

Blue-white with a yellow band on each segment; double dorsal series of faint black marks alternating with black spots; a spiracular series of yellow spots and black marks; head yellow spotted with black. Food-plants: *Verbascum* and *Scrophularia*. 6–7.

2168. Cucullia prenanthis.

Cucullia prenanthis, Boisd. Gen. et Ind. Meth. p. 154 (1840); Staud. Cat. Lep. pal. p. 214.

Noctua ceramanthea, Frr. Neue Beitr. v. pl. 432 (1852); Herr.-Schäff. Eur. Schmett., Noct. ff. 185–6.

Noctua blattariæ, Dup. Lép. Fr. vii. pl. 124. f. 5 (nec Esp.).

Head rufous with some whitish on frontal tufts; thorax grey tinged with red-brown; tegulæ with two slight medial lines and red-brown tips; dorsum of thorax red-brown; abdomen greyish suffused with brown, the dorsal crests red-brown. Fore wing pale rufous with some whitish above the dark marks on inner area; the costal area towards apex dark brown with some white points on it; a faint brown streak in submedian fold to the antemedial line, which is highly angled outwards in the interspaces and inwards on the veins, very indistinct except from submedian fold to vein 1, where it is double; an oblique dark brown fascia on medial part of inner margin; orbicular and reniform obsolete; postmedial line obsolete except below vein 2, where it forms two whitish lunules defined on each side by brown; a slight brown streak above medial part of vein 4; the terminal area towards tornus obliquely from vein 4 to postmedial lunules dark brown with slight whitish streaks on it; cilia brown at base intersected with white, greyish at tips. Hind wing

reddish brown, the basal and inner areas paler in male; cilia brown, with fine pale line at base and white tips; the underside pale with small discoidal spot and indistinct sinuous postmedial line.

Hab. Germany, E. Saxony; Austria, Frey Coll., Carniola, Zeller Coll.; Hungary, Leech Coll.; Switzerland, Leech Coll.; Galicia; Rumelia; Russia; Asia Minor, Pontus. *Exp.* 38–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 254.

Green with yellowish dorsal and subdorsal lines and white lateral line. Food-plant, seeds of *Scrophularia vernalis*. 6.

*2169. Cucullia oribac.

Cucullia oribac, Barnes, Can. Ent. xxxvi. p. 237 (1904).

♂. Differs from *C. agua* in the fore wing being without the dark patch and white subcostal spot at base; orbicular and reniform absent; cilia with white points at base at extremities of veins; the medial area with three oblique dark striæ from costa, with the area below them tinged with pale brown to median nervure, the 3rd striga continued to termen below apex, the area above it greyer with slight dark streaks; the brown-shaded costal area towards apex longer and narrower than in *C. agua*; the inner area greyer with the veins darker; the black fascia on inner margin slighter; the pale dark-defined portion of postmedial line on inner area rather S-shaped and oblique. Hind wing with the dark-suffused terminal area darker.

Hab. U.S.A., Arizona, Huachuca Mts. *Exp.* 47 millim.

This species is unknown to me, it may perhaps be the same as *C. perstrigata*, Schaus.

Genus ARGYROGALEA, nov.

Type, *A. argentea*.

Proboscis fully developed; palpi short, obliquely upturned, fringed with hair on both sides; frons with slight rounded prominence; eyes large, rounded; antennæ almost simple in both sexes; head and thorax clothed with hair only, the tegulæ produced behind into a hood, the metathorax with double crest; tibiæ fringed with long hair on outer side; abdomen with dorsal crests on basal segments. Fore wing rather long and narrow, the apex produced and the termen oblique; veins 3 and 5 from near angle of cell; 6 from upper angle, 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2170. Argyrogalea argentea.

Noctua argentea, Hüfn. Berl. Mag. iii. p. 286 (1767); Esp. Schmett. iv. pl. 109. ff. 6–9; Knoch, Beitr. i. p. 45, pl. 3. ff. 1, 2; Cram. Pap. Exot. iv. p. 242, pl. 400. f. G; Staud. Cat. Lep. pal. p. 217.

Noctua artemisiæ, Schiff. Wien. Verz. p. 312 (1776), nec Hüfn.; Cram. Pap. Exot. iv. p. 223, pl. 396. f. G; Hübn. Eur. Schmett., Noct. f. 259;

Dup. Lép. Fr. vii. p. 439, pl. 127. f. 4; Steph. Ill. Brit. Ent., Haust. iii. p. 91.
Cucullia subcærulea, Staud. Cat. Lep. pal. 217 (1901).

Head olive-brown mixed with white; thorax white, the tegulæ at base and tips, upper edge of patagia, and metathoracic crests olive-brown; abdomen white, dorsally tinged with ochreous at base. Fore wing golden green with some dark irroration; a more or less developed oblique silvery-white subbasal band from below costa to vein 1 and a streak above inner margin before middle; a slight dark spot in middle of cell defined by silvery-white lunules above and below, the lower conjoined to a more or less developed oblique quadrate patch below the cell; a slight dark discoidal spot defined by silvery-white lunules above and below; traces of a whitish post-

Fig. 9.—*Argyrogalea argentea*, ♂. ½.

medial line oblique from costa to vein 6, then inwardly oblique: a silvery-white postmedial band, formed by a dentate patch below costa, connected with or separated from an oblique band from vein 4 to just above inner margin; the costa white towards apex; a white terminal band; cilia grey at base, white at tips. Hind wing white, the terminal area suffused with brown.

Ab. 1. *subcærulea*. Paler, the fore wing bluish green.—W. Siberia; W. Turkestan.

Hab. Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Galicia; Dalmatia; Greece, Merlin Coll.; Scandinavia; Russia; W. Siberia, Altai; W. Turkestan, Ferghana, Tarbagatai; E. Siberia, Amurland. *Exp* 36–42 millim.

Larva. Kirby, Butt. & Moths Eur. p. 260, pl. 41. f. 9.

Dorsal area olive-brown with the dorsal and subdorsal lines pale yellow, each somite with a broad pinkish band thickly striated with purple-brown; thoracic somites with pale yellow lateral stripe, broken up into oblique bars on abdominal somites; stigmatal and ventral lines defined on each side by purple-brown: head with the hemispheres pinkish.

Genus **ARGYROMATA**, nov.

Type, *A. splendida*.

Proboscis fully developed; palpi short, obliquely upturned and fringed with hair; frons with truncate, rather heart-shaped prominence with raised edges, its lower edge produced to a point; eyes large, rounded; antennæ almost simple; head and thorax clothed with hair and hair-like scales, the tegulæ

produced behind into a small hood; fore tibiæ produced at extremity into a small medial claw, the tibiæ fringed with long hair on outer side; abdomen without dorsal crests. Fore wing long and narrow, the apex produced, the termen oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2171. Argyromata splendida.

Phalæna splendida, Cram. Pap. Exot. iv. p. 242, pl. 400. f. F (1782); Dup. Lép. Fr., Suppl. iii. p. 428, pl. 38. f. 1; Herr.-Schäff. Eur. Schmett. ii. p. 318, Noct. f. 190; Staud. Cat. Lep. pal. p. 217.
Noctua argyrea, Frr. Beitr. iv. pl. 304. f. 2 (1842).

Head and thorax white tinged with grey or brown; tegulæ with pure white medial band; legs striped with white; abdomen white tinged with ochreous. Fore wing silvery blue-green, the inner margin ochreous from before middle to tornus; cilia white. Hind

Fig. 10.—*Argyromata splendida*, ♂. ½.

wing white, the veins and terminal half tinged with brown; cilia white.

Hab. S. Russia, Sarepta, Zeller and Leech Colls., Urals; W. Siberia, Altai, Leech Coll.; W. Turkestan, Marghilan, 1 ♂, Ferghana, Issyk Kul; E. Turkestan, Ili; Mongolia, Uliassutai; Tibet, Amdo.
Exp. 40–42 millim.

Genus NYCTEROPHÆTA.

	Type.
Nycterophæta, Smith, Bull. Brooklyn Ent. Soc. iv. p. 45 (1882)	*luna*.
Epinyctis, Grote, Can. Ent. xiv. p. 75 (1882)	*luna*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair above and below; frons with obliquely rounded prominence with corneous plate below it; eyes large, rounded; antennæ almost simple in both sexes; head and thorax clothed with hair only, the tegulæ produced behind into a hood; fore tibiæ with strong curved claw on inner side and short claw on outer; abdomen without crests. Fore wing long and narrow, the apex produced, the termen oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked; 8 anastomosing with the cell near base only.

2172. Nycterophæta luna.

Cucullia luna, Morr. Proc. Bost. Soc. N. H. xviii. p. 122 (1875); Smith, Cat. Noct. N. Am. p. 267.
Nycterophæta magdalena, Hulst, Bull. Brooklyn Ent. Soc. iv. p. 45 (1882).
Epinyctis notatella, Grote, Can. Ent. xiv. p. 75 (1882).

Head and thorax pure white: abdomen white, sometimes tinged with brown. Fore wing silvery white; a subbasal black point below costa; antemedial points below costa and above inner

Fig. 11.—*Nycterophæta luna*, ♂. ½.

margin; a point in middle of cell and another at lower angle; a postmedial point on inner margin; four points on termen between vein 5 and submedian fold. Hind wing pure white.

Hab. U.S.A., Dakota, Montana, Wyoming, Black Hills, Colorado, Denver (*Bruce*, *Oslar*), 5 ♂, 1 ♀. *Exp.* 44–46 millim.

Genus OPSIGALEA, nov.

Type, *O. ocellata*.

Proboscis fully developed; palpi upturned, reaching vertex of head and thickly clothed with hair; frons with slight rounded prominence; eyes large, rounded; antennæ of male almost simple; head and thorax clothed chiefly with scales, the tegulæ produced behind into a slight hood, the metathorax with triangular crest; tibiæ moderately fringed with hair; abdomen without dorsal crests. Fore wing long and narrow, the apex produced, the termen oblique, excised towards tornus; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from above angle of cell; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2173. Opsigalea ocellata.

Nyctale ocellata, Wlk. xxxiii. 760 (1865); Druce, Biol. Centr.-Am., Het. i. p. 249.

♂. Head and thorax grey and fuscous mixed, the metathorax pale fulvous; tegulæ with curved black medial line; pectus and legs ochreous white; abdomen whitish dorsally tinged with brown. Fore wing with the costal half ochreous white, the costa tinged with brown from before middle to apex; the inner half grey finely pencilled with fuscous; subbasal line represented by an oblique striga from costa; a

prominent black streak in submedian fold from near base to middle: antemedial line very highly dentate, with a long hardly traceable tooth in cell and longer teeth in submedian interspace and above inner margin; the terminal part of median nervure streaked with black; the veins of medial part of terminal area streaked with black;

Fig. 12.—*Opsigalea ocellata*, ♂. ½.

a large round subterminal black spot with white annulus above tornus defined on inner side by a curved black line; a fine black terminal line reduced to small spots towards apex. Hind wing semihyaline white.

Hab. Mexico, Oaxaca (*Sallé*), 1 ♂ type. *Exp.* 52 millim.

Genus **EMPUSADA**, n. n.

Type.

Empusa, Hübn. Verz. p. 247 (1827), nec. Ill. Orth. 1798..... *lactea.*

Proboscis fully developed; palpi obliquely upturned, rather short, fringed with hair on both sides; frons with slight rounded prominence with corneous plate below it; eyes large, rounded; antennæ almost simple in both sexes, thorax clothed with hair and hair-like scales, the tegulæ produced behind into a slight hood; metathorax and abdomen not crested; the anal tuft long; tibiæ fringed with long hair on outer side. Fore wing long and narrow, the apex produced, the termen oblique, the inner margin lobed near base; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with silvery-white markings.
  a. Fore wing with the silvery-white extending to base.
    a^1. Fore wing with silvery-white fascia from base through the cell to apex ..... *argyrina.*
    b^1. Fore wing with the silvery-white not extending beyond the cell ..... *argentina.*
  b. Fore wing with the silvery-white not extending to base.
    a^1. Fore wing with the silvery-white fascia in discal fold arising well before origin of vein 2 ..... *hutchinsoni.*
    b^1. Fore wing with the silvery-white fascia in discal fold arising above origin of vein 2..... *argentivitta.*
B. Fore wing without silvery-white markings.
  a. Fore wing with fiery-red or red-brown suffusion below base of cell with yellow fascia below it.
    a^1. Fore wing without yellow fascia in and beyond end of cell.
      a^2. Fore wing with black streak on median nervure and grey-white patch below end of cell ..... *pyrostrota.*

b^2. Fore wing without black streak on median nervure or grey-white patch below end of cell ..... *ruficeps*.
b^1. Fore wing with yellow fascia in and beyond end of cell.
a^3. Fore wing with three black points in upper part of cell ..... *chrysida*.
b^3. Fore wing without black points in cell ..... *pallidistria*.
b. Fore wing without red or brown suffusion below base of cell.
a^1. Fore wing with black streak in base of submedian fold.
a^2. Fore wing with prominent pale yellow fasciæ in discal and submedian folds ..... *biornata*.
b^2. Fore wing with hardly any yellow in discal and submedian folds.
a^3. Fore wing strongly suffused and irrorated with brown; hind wing with the terminal area strongly suffused with brown ..... *balsamitæ*.
b^3. Fore wing and terminal area of hind wing slightly tinged with pale brown ..... *sabulosa*.
b^1. Fore wing without black streak in base of submedian fold ..... *lactea*.

2174. Empusada argyrina. (Plate XCVIII. fig. 12.)

Cucullia argyrina, Guen. Noct. ii. p. 150, pl. 9. f. 3 (1852).
Argyritis pura, Butl. Trans. Ent. Soc. 1883, p. 86.

♂ (*pura*). Head and thorax white pencilled with pale brown; abdomen white. Fore wing bright red-brown, the inner area paler; a silvery-white fascia in and above cell to just below costa, curved upwards beyond the cell to a point at apex; a white streak on vein 1 from before middle to beyond middle; a white line just before termen between veins 7 and 2; cilia white with three brown lines through them. Hind wing white, the terminal area reddish brown, rather broadly at costa and narrowing to a point at submedian fold; the underside wholly white.

♀. Head, thorax, and abdomen browner; hind wing wholly tinged with brown.

The typical form from Argentina and Uruguay has the inner area of fore wing almost wholly white and the hind wing of female as in the male.

Hab. Argentina (*Thomas*), 1 ♂, 1 ♀; Uruguay; Chili, Coquimbo (*J. J. Walker*, *Edmonds*), 3 ♂, 1 ♀ type *pura*. *Exp.*, ♂ 32, ♀ 36 millim.

2175. Empusada argentina.

Noctua argentina, Fabr. Mant. Ins. ii. p. 162 (1787); Hübn. Eur. Schmett., Noct. f. 553; Dup. Lép. Fr. vii. p. 442, pl. 127. f. 5; Staud. Cat. Lep. pal. p. 217.
Cucullia achalina, Püng. Iris, xiii. p. 120 (1900).

Head and thorax ochreous white, the head tinged with brown, the tegulæ with two dark lines, a few black-tipped scales on upper edge of patagia; abdomen ochreous white, the extremity of ventral surface often with some rufous. Fore wing pale yellow, the cell and area above its base and below it from just below costa to sub-

median fold silvery white, partly edged with dark scales and with some rufous suffusion below it and above its extremity; postmedial line represented by brown points above and below vein 6 and an indistinct very oblique waved line from vein 4 to inner margin; an oblique irregular fuscous shade from termen below apex to inner margin beyond middle; a terminal series of brown striæ. Hind wing pure white.

Ab. 1. *achalina*. Fore wing with the brown markings darker; hind wing suffused with brown.—Aschabad.

Hab. Hungary; S. Russia; Zeller, Frey, and Leech Colls.; Algeria; Asia Minor, Amasia, Zeller Coll., Pontus; Persia; E. Turkestan, Ferghana, Askhabad, type† *achalina* in Coll. Püngeler, Tura, Sarawschan, Tarbagatai, Issyk Kul; W. Siberia, Altai; E. Turkestan, Ili. *Exp.* 34–40 millim.

Larva. Pale yellow tinged with brown and transversely striated with black, leaving the dorsal, subdorsal, lateral, subventral, and ventral lines pale yellow; each somite with diffused rufous medial band; head with the hemispheres pale rufous with two series of black striæ. Foot-plant, *Artemisia*.

2176. **Empusada hutchinsoni**. (Plate XCVIII. fig. 13.)

Cucullia hutchinsoni, Hmpsn. Ann. S. Afr. Mus. ii. p. 276 (1902).

Head and thorax white pencilled with grey and tinged with flesh-colour; abdomen white irrorated with grey and tinged with brown towards extremity. Fore wing ochreous almost wholly suffused with bright rufous, the costal and inner areas violaceous grey irrorated with fuscous; a silvery-white stripe tapering at extremities from middle of cell to termen, sometimes with slight silvery streaks above and below it on terminal area; a rufous streak below base of cell; traces of a very oblique waved postmedial line from vein 4 to submedian fold; traces of a waved subterminal line at middle; a terminal series of black points. Hind wing white, the veins slightly tinged with brown.

Hab. Natal, Estcourt (*Hutchinson*), 1 ♂ type, Mooi R., 1 ♀. *Exp.* 44–50 millim.

2177. **Empusada argentivitta**, n. sp. (Plate XCVIII. fig. 14.)

Head and thorax whitish irrorated with grey; tegulæ with slight dark lines; abdomen ochreous white with slight dark irroration. Fore wing pale yellow tinged with grey and irrorated with fuscous; a double very oblique antemedial line from submedian fold to vein 1; two minute black points in middle of cell; a silvery-white fascia tapering at extremities from cell above origin of vein 2 to just before termen; traces of a very oblique double waved postmedial line from vein 4 to submedian fold; traces of a waved subterminal line at middle; a terminal series of black points. Hind wing white, the veins and sometimes the termen tinged with brown, especially in female.

Hab. Basutoland, Maseru (*Crawshay*), 1 ♂; Cape Colony, Transkei (*Miss F. Barrett*), 4 ♂, 3 ♀ type. *Exp.* 38–40 millim.

2178. **Empusada pyrostrota.** n. sp. (Plate XCVIII. fig. 15.)

♀. Head blackish with a white bar above frons; thorax brownish white; abdomen brownish white. Fore wing pale yellow, the costal area irrorated with fuscous; the cell and areas just beyond it and below it to origin of vein 2 suffused with fiery red, the area below its extremity grey-white; the median nervure streaked with black; the veins and interspaces of terminal area streaked with brown; a slight blackish streak above inner margin before middle; three black points in upper extremity of cell. Hind wing white, the veins and termen tinged with brown.

Hab. Transvaal, Johannesburg (*Cholmley*), 1 ♀ type. *Exp.* 44 millim.

2179. **Empusada ruficeps.** n. sp. (Plate XCVIII. fig. 16.)

♀. Head and thorax brownish grey, the vertex of head tinged with rufous; abdomen brownish grey irrorated with fuscous. Fore wing grey-brown, the cell suffused and streaked with bright rufous; the area below the cell to origin of vein 2 suffused with rufous with a curved pale yellow streak below it; three slight dark points in upper extremity of cell; traces of a waved postmedial line bent outwards below costa and oblique below vein 4; the veins and interspaces of terminal area slightly streaked with brown; a terminal series of black points. Hind wing white, the veins and terminal area suffused with brown.

Hab. Madagascar, Betsileo (*Cowan*), 1 ♀ type. *Exp.* 40 millim.

2180. **Empusada chrysota.** (Plate XCVIII. fig. 17.)

Cucullia chrysota, Hmpsn. Ann. S. Afr. Mus. ii. p. 277 (1902).

Head rufous with a yellowish bar above frons; thorax grey, the tegulæ with fine dark lines; abdomen brownish white. Fore wing with the costal area pale golden yellow irrorated with brown and tinged with brown towards apex; the cell and area below it to origin of vein 2 red-brown, a curved golden fascia below the latter; the rest of wing purple-grey with darker irroration; three black points in upper part of cell; the veins and interspaces of medial part of terminal area streaked with brown. Hind wing white, the veins and termen tinged with brown.

Hab. Germ. E. Africa; Natal, Estcourt (*Hutchinson*), 1 ♂, Durban (*Innes*), 1 ♂, 1 ♀. *Exp.* 36–38 millim.

2181. **Empusada pallidistria.** (Plate XCVIII. fig. 18.)

Cucullia pallidistria, Feld. Reis. Nov. pl. 108. f. 54 (1874).

♂. Head, thorax, and abdomen grey irrorated with fuscous. Fore wing grey slightly irrorated with fuscous; a yellow-brown fascia below base of cell to origin of vein 2 with pale golden-yellow

streak below it: a yellow-brown fascia in lower end of cell extending along vein 4 to near termen with a yellowish-white streak above it; a slight white streak above terminal part of vein 6; three black points in upper part of cell, a black point just beyond upper angle and an obliquely-placed postmedial series on veins 3, 2, 1; a terminal series. Hind wing white, the veins and terminal area broadly and irregularly suffused with fuscous brown.

Hab. Basutoland, Maseru (*Crawshay*), 1 ♂; Cape Colony, Kokstad (*Mrs. Pringle*), 1 ♂. *Exp.* 44–46 millim.

2182. **Empusada biornata.**

Cucullia biornata, Fisch. d. Wald. Bull. Mosc. 1840, p. 83, pl. 3. f. 1; Frr. Neue Beitr. iv. p. 352, f. 4; Herr.-Schäff. Eur. Schmett. ii. p. 317, Noct. f. 197; Staud. Cat. Lep. pal. p. 215.

Head whitish and fuscous, a white bar above frons; thorax ochreous white tinged with brown; tegulæ with black line near base, two fine fuscous medial lines and one near tips; abdomen grey-white tinged with brown. Fore wing grey-white tinged with brown; a pale yellow fascia below the cell traversed by a fine black streak in submedian fold to below origin of vein 2; a pale yellow fascia from middle of cell to well beyond the cell, where it extends from vein 5 to 7, the streaks on it being pale rufous; antemedial line indistinct, very highly dentate in the interspaces; a fine streak below end of cell between veins 2 and 4, bent upwards above vein 3; postmedial line indistinct, obsolete except from vein 2 to inner margin, angled outwards at vein 1; the veins of terminal area dark defined by fine white streaks and with fine white streaks in the interspaces. Hind wing white, the terminal area suffused with pale brown; the underside with slight discoidal spot.

Hab. S. Russia, Zeller and Leech Colls; W. Turkestan, Ferghana, Issyk Kul; W. Siberia, Altai; E. Turkestan, Ili. *Exp.* 54 millim.

2183. **Empusada balsamitæ.**

Cucullia balsamitæ, Boisd. Gen. et Ind. Meth. p. 154 (1840); Frr. Neue Beitr. iv. pl. 358 (1841); Dup. Lép. Fr., Suppl. iv. p. 77, pl. 57. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 199; Staud. Cat. Lep. pal. p. 215.

Head and thorax purplish grey mixed with pale brown; frons with dark bar; tegulæ with blackish line near base and two fuscous medial lines; abdomen whitish, dorsally tinged and irrorated with brown. Fore wing pale purplish grey suffused and irrorated with brown, the veins with fine dark streaks; a black streak on an ill-defined yellow-brown fascia in submedian fold to the antemedial line, which is indistinct, very highly angled outwards in the interspaces, especially the submedian, and inwards on the veins; the end of cell and area beyond it pale yellowish brown; some dark points above median nervure; a curved streak below end of cell representing the lower edge of reniform; postmedial line obsolete except from vein 2 to inner margin, where it is indistinct, angled inwards

in submedian fold and outwards on the veins; a slight black streak above medial part of vein 4; the terminal area with slight brown and white streaks; a black streak above extremity of vein 3 and oblique subterminal streak below vein 2 sometimes present. Hind wing brownish white, the veins and terminal area suffused with brown, in female the whole terminal half brown: the underside with the costal area irrorated with brown, a small discoidal spot.

Hab. S.E. Germany; Austria; Hungary, Frey and Leech Colls.; Galicia; S. Russia, Zeller, Frey, and Leech Colls.; W. Turkestan, Issyk Kul. *Exp.* 48–52 millim.

Larva. Kirby, Butt. & Moths Eur. p. 256.

Pale yellow with an interrupted orange dorsal line; subdorsal series of black spots and lateral series of orange spots. Food-plants: Rue, Hawkweed, &c.

*2184. Empusada sabulosa. (Plate XCVIII. fig. 19.)

Cucullia sabulosa, Staud. Stett. ent. Zeit. 1879, p. 322; id. Cat. Lep. pal. p. 215.

♂. Head and thorax ochreous-white tinged with brown; vertex of head with brown bar; tegulæ with fine blackish line near base, two slight brown medial lines and brown line near tips; tibiæ with brown streaks; abdomen ochreous-white tinged with brown. Fore wing ochreous-white slightly tinged with pale red-brown except the the cell which is whiter, the veins slightly streaked with brown; cilia white with a faint brown line through them. Hind wing white; the veins tinged with brown; the terminal area slightly suffused with pale red-brown to vein 2; the underside nearly pure white.

Hab. S. Russia, Narün, cotype † ♂ in Coll. Püngeler. *Exp.* 44 millim.

2185. Empusada lactea.

Noctua lactea, Fabr. Mant. Ins. ii. p. 182 (1787); Esp. Schmett. iv. pl. 190. f. 1; Hübn. Eur. Schmett., Noct. f. 448; Dup. Lép. Fr. vii. p. 436, pl. 127. f. 3, Suppl. iii. pl. 36. f. 2; Staud. Cat. Lep. pal. p. 215.

White; head and thorax with some fuscous mixed; abdomen

Fig. 13.—*Empusada lactea*, ♂. ½.

slightly tinged with fuscous. Fore wing irrorated with pale fuscous; no trace of markings. Hind wing with the veins and

terminal area tinged with pale brown; the underside with the costal and terminal areas slightly irrorated with brown, a small discoidal spot.

Hab. S. Russia, Sarepta, Zeller, Frey, and Leech Colls.; Armenia; W. Siberia, Altai. *Exp.* 44–50 millim.

Genus **LOPHOTERGES**, nov.

Type, *L. fatua.*

Proboscis fully developed; palpi porrect, the second joint extending to well beyond frons and fringed with long hair below, the third rather long; frons smooth; eyes large, rounded; antennæ of male almost simple, somewhat laminate; frons and vertex of head with strong ridges of hair; thorax clothed chiefly with scales, the tegulæ produced behind into a hood, the metathorax with double crest; tibiæ fringed with hair; abdomen with dorsal crests on basal segments, the crest on 3rd segment large. Fore wing with the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line obsolete, except at costa... *millierei.*
B. Fore wing with the postmedial line entire, double ..... *fatua.*

2186. Lophoterges millierei.

Lithocampa millierei, Staud. Berl. ent. Zeit. 1870, pp. 119, 330; Mill. Icones, iii. p. 219, pl. 123; Staud. Cat. Lep. pal. 212.

Head and tegulæ white slightly tinged with brown; tegulæ with black medial line; thorax red-brown; abdomen grey-white, the dorsal crests browner. Fore wing grey-white, the cell and area beyond it to near termen red-brown, the basal half of costal area whiter; a black streak defined by whitish above below base of cell; subbasal line represented by a very oblique black striga from costa; antemedial line represented by a very oblique black striga from costa and traces of a dentate line from cell to inner margin; orbicular and reniform white defined by brown and their centres defined by brown, the former narrow, very oblique, extending below cell and slightly confluent with the latter, which is a narrow lunule; a black streak beyond the cell above vein 4 with an oblique series of short streaks between its extremity and termen below apex; postmedial line represented by an oblique dark striga from costa; subterminal line represented by a slight oblique line between vein 3 and submedian fold slightly defined by whitish on inner side; a fine black terminal line defined by a fine white line on inner side; cilia brownish intersected with white and with fine white line through them. Hind wing white, the terminal area in female suffused with brown.

Hab. Spain, Catalonia. *Exp.*, ♂ 28, ♀ 32 millim.

Larva. Whitish; dorsal line yellow; subdorsal line white, dilated between joints of somites 4–9 and enclosing small elliptical red-

brown spots, meeting dorsally at the bifid hump on segment 11; lateral line yellow; head brownish. Food-plant, *Lonicera*.

Subsp. *centralasiæ*, Staud. Cat. Lep. pal. p. 212 (1901).

Larger; thorax grey tinged with brown; fore wing with the cell and area beyond it slightly tinged with brown; the orbicular and reniform well separated below; hind wing of male with the terminal half suffused with brown, of female almost wholly suffused with brown.

Hab. W. Turkestan, Ferghana, Issyk Kul, 1 ♂. *Exp.* 38 millim.

*2187. Lophoterges fatua.

Lithocampa fatua, Püng. Iris, xvi. p. 288, pl. vi. f. 4 (1904).

Head and tegulæ grey tinged with brown; palpi with strong black streak at side of 2nd joint; frons and vertex of head with blackish bars; tegulæ with black line near base; thorax blackish with some grey at extremity of patagia and on metathorax; pectus and legs brown mixed with grey; abdomen black-brown with grey segmental rings, paler in female. Fore wing grey suffused with fuscous brown, the veins with slight blackish streaks; subbasal line represented by double black striæ from costa; a short whitish streak in base of submedian fold on a brown patch; an oblique black streak across the cell before the antemedial line, which is indistinctly double, curved, somewhat dentate; claviform absent; orbicular narrow, very oblique, elliptical, grey defined by black, its centre slightly defined by brown, connected with a similar semicircular mark below

Fig. 14.—*Lophoterges fatua*, ♂. ½.

the cell nearly touching lower edge of reniform, which is a narrow lunule with its extremities produced, with brownish centre and whitish annulus defined by black; postmedial line indistinctly double filled in with grey, strongly bent outwards below costa, then minutely dentate and produced to short black streaks on the veins, obliquely excurved to vein 4, then incurved, some slight grey points beyond it on costa; an obliquely curved blackish shade from apex to lower angle of cell, crossed by a series of black streaks in interspaces of terminal area; an incurved dark subterminal line from vein 4 to inner margin, with some whitish scales on inner side in submedian fold; a fine slightly waved black terminal line; cilia brown with whitish line at base. Hind wing ochreous, nearly uniformly suffused with red-brown; cilia white with a brown line

through them; the underside whitish irrorated with pale and dark brown, a black discoidal lunule and postmedial series of short streaks on the veins.

Hab. Tibet, Kuku-noor, type †♂, ♀ in Coll. Püngeler. *Exp.* 36–40 millim.

Genus **CALLIERGES**.

	Type.
Callierges, Hübn. Verz. p. 244 (1827)	*ramosa*.
Lithocampa, Guen. Noct. ii. p. 108 (1852)	*ramosa*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with long hair in front, the 3rd porrect; frons smooth, with ridges of hair at middle and above; eyes large, rounded; antennæ of male bipectinate, with moderate branches to apex; head and thorax clothed with hair and hair-like scales, the tegulæ produced to a dorsal ridge, the pro- and metathorax with spreading crests; abdomen with large dorsal crests on basal segments. Fore wing with the apex rectangular, the termen non-crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2188. Callierges ramosa.

Eombyx ramosa, Esp. Schmett. iii. p. 391, pl. 78. f. 3 (1787); Hübn. Eur. Schmett., Noct. f. 247; Dup. Lép. Fr. vii. p. 228, pl. 114. f. 5; Frr. Neue Beitr. iii. pl. 245; Staud. Cat. Lep. pal. 212.
Lithocampa ramosula, Staud. Stett. ent. Zeit. 1888, p. 258; id. Rom. Mém. vi. p. 524, pl. 10. f. 3.

Head and tegulæ grey-white; palpi brown at sides; frons with black bar; tegulæ with black line near base and brown band near tips; thorax dark red-brown, the crests with some grey; pectus grey mixed with some brown; tarsi blackish with pale rings; abdomen grey irrorated with brown, the dorsal crests dark brown.

Fig. 15.—*Callierges ramosa*, ♂. ½.

Fore wing grey-white irrorated with fuscous, the submedian interspace chocolate-brown, extending into the cell before orbicular and joined by an oblique chocolate band from apex; a black streak below basal half of cell; an oblique subbasal streak above inner margin and two streaks above middle of inner margin; subbasal and antemedial lines represented by slight oblique striæ from costa; orbicular and reniform very large and confluent except above, extending to well below the cell, where they are defined by a prominent curved black streak, slightly defined above; postmedial

line indistinct, dark, bent outwards below costa, oblique below vein 4 and obsolete below vein 3; a black streak above vein 5 and short streaks above terminal parts of veins 6, 5, the veins of terminal area with slight dark streaks; a curved white mark from termen at vein 3 to tornus with some black beyond its upper part; cilia chequered fuscous and grey. Hind wing white, the veins of terminal half and terminal area tinged with red-brown, in female almost wholly tinged with red-brown; a small discoidal spot; cilia white with a pale brown line near base; the underside white, the costal area slightly irrorated with brown.

Ab. 1. *ramosula*. Darker; fore wing with the orbicular and reniform much better defined, confluent below but not defined by such a long curved streak.—Amurland.

Hab. S.E. France, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland, Zeller Coll.; Spain, Catalonia; N. Italy; Amurland, Ussuri. *Exp.* 32–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 251; Hffm. Raup. p. 124. pl. 33. f. 3.

Brownish yellow variegated with whitish on dorsum and with oblique black subdorsal stripes; a lateral dark stripe. Food-plant, *Lonicera*. 7–8.

Genus **HYPOMECIA**.

Type.

Hypomecia, Staud. Iris, x. p. 291 (1897) ..... *quadrivirgula*.

Proboscis fully developed; palpi obliquely upturned, short, fringed with hair and scales in front, the 3rd joint short, porrect; frons smooth, rounded; eyes large, rounded; antennæ of male bipectinate, the apical part serrate; head and thorax clothed chiefly with scales; tibiæ fringed with long hair; build slender; abdomen without crests. Fore wing rather long and narrow; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing ample; veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from angle; 8 anastomosing with the cell near base.

2189. Hypomecia quadrivirgula.

Epimecia quadrivirgula, Mab. Bull. Soc. Ent. Fr. 1888, p. 51; id. Nov. Lep. p. 67, pl. 11. f. 5; Staud. Cat. Lep. pal. p. 213.

♂. Head and tegulæ white mixed with brown, the latter with brown line at base, two slight medial lines and more prominent line before tips; thorax fuscous mixed with grey; pectus and legs whitish mixed with brown; abdomen white. Fore wing whitish, mostly suffused with fuscous, the costal area tinged with ochreous, the veins with slight dark streaks; an ill-defined white fascia below basal half of cell irrorated with a few large black scales; faint traces of a dentate antemedial line strongly angled outwards on vein 1; orbicular represented by a faint whitish streak with one or two black scales on it, the reniform by a white point at lower angle of

cell, with some black scales on its inner edge ; some white points on costa towards apex ; subterminal line represented by a series of slight white streaks with obscure dentate blackish marks before them, defined on inner side by an oblique white band from vein 4 to inner margin ; cilia chequered brown and white. Hind wing

Fig. 16.—*Hypomecia quadrivirgula*, ♂. $\frac{1}{1}$.

white with fine brown terminal line ; the underside with the costal and terminal areas slightly irrorated with brown, a slight discoidal lunule.

Hab. Algeria ; Palestine, 1 ♂. *Exp.* 34 millim.

Genus **COPIPHANA**, nov.

Type, *C. olivina*.

Proboscis fully developed ; palpi obliquely upturned, fringed with long hair in front ; frons with large corneous prominence with raised rim and central process hollowed out in front ; eyes large, rounded ; antennæ of male bipectinate or with small laminate serrations ; head and thorax clothed with long rough hair only, the vertex of head with crest of hair, shoulders with crests pro- and metathorax with double crests, patagia with curled-up tufts at extremity ; pectus and tibiæ clothed with long hair ; fore tibia with curved claw on inner side at extremity ; abdomen with some rough hair at base, large crest on 2nd segment typically present, and lateral fringes of hair. Fore wing with the costa somewhat concave, the termen evenly curved ; veins 3 and 5 from near angle of cell ; 6 from upper angle ; 9 from 10 anastomosing with 8 to form the areole, or abnormally 9 and 10 anastomosing with 8 ; 11 from cell. Hind wing with veins 3, 4 from angle of cell ; 5 obsolescent from middle of discocellulars ; 6, 7 from upper angle ; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with moderate branches decreasing to base and apex ; abdomen without dorsal crest.

2190. Copiphana gassana.

Cleophana gassana, Bang-Haas, ined.

Head and thorax white slightly mixed with brown ; tarsi brown ringed with white ; abdomen whitish dorsally tinged with red-brown, ventrally irrorated with brown. Fore wing ochreous whitish suffused with red-brown and with some fuscous before the postmedial line, the median nervure and veins of terminal area streaked with black ; an oblique black streak on inner area before the antemedial line, which is double, minutely waved from costa to

median nervure, then oblique, incurved to inner margin; claviform and orbicular absent; reniform a slight pale lunule; postmedial line double filled in with whitish, with a black mark beyond it at costa, obliquely excurved and sinuous from costa to vein 4, then retracted to origin of vein 2 and again excurved; the veins of terminal area defined on each side by slight whitish streaks; cilia

Fig. 17.—*Copiphana gassana*, ♂. ½.

chequered ochreous white and reddish brown. Hind wing ochreous white suffused and irrorated with brown; an indistinct sinuous postmedial line with slight pale band beyond it; the underside white, irrorated with brown, an obscure diffused curved postmedial line and terminal band.

Hab. Tunis, 1 ♂, 1 ♀. *Exp.* 28 millim.

Sect. II. Antennæ of male with laminate serrations; abdomen with large dorsal crest on 2nd segment.

A. Fore wing with dark medial line with whitish band beyond it ..... *oliva.*
B. Fore wing with slight olive medial shade without whitish band beyond it ..... *olivina.*

2191. Copiphana oliva. (Plate XCIX. fig. 1.)

Cleophana oliva, Staud. Iris, vii. p. 279, pl. ix. f. 15 (1894); id. Cat. Lep. pal. p. 213.

♂. Head and thorax whitish tinged with red-brown and slightly mixed with fuscous; abdomen whitish dorsally suffused with fuscous. Fore wing whitish, the basal half and terminal area, except at apex and tornus, suffused with red-brown; the veins with dark streaks; the antemedial line at middle of wing, excurved from costa to vein 2, angled inwards in submedian fold and outwards on vein 1; claviform small, white defined by brown; orbicular and reniform absent; postmedial line represented by a slight oblique striga from costa; some whitish streaks in interspaces of terminal area; cilia whitish intersected with brown. Hind wing pale saffused with pale brown on basal half and fuscous on terminal half; cilia chequered brownish white and fuscous; the underside white slightly irrorated with brown, an indistinct diffused curved postmedial line.

Hab. Armenia, 1 ♂; Asia Minor, Paphlagonia. *Exp.* 28 millim.

2192. Copiphana olivina.

Cleophana olivina, Herr.-Schäff. Eur. Schmett. vi. p. 57, f. 578 (1856); Staud. Cat. Lep. pal. p. 213.
Cleophana ferrieri, Bell. Ann. Soc. Ent. Fr. 1857, p. 13, pl. 1. f. 1.

Head and thorax pale olive-green mixed with some rufous, the crests on vertex of head, pro- and metathorax with darker tips; abdomen greyish tinged with olive, dorsally irrorated with fuscous and ventrally tinged with rufous towards extremity. Fore wing pale olive-green, the veins with slight dark streaks; a diffused rufous medial shade with pale point on it below cell; a diffused whitish mark at lower angle of cell; the terminal area suffused with rufous above and below discal fold; cilia chequered dark

Fig. 18.—*Copiphana olivina*, ♂. ½.

brown and white. Hind wing fuscous brown; cilia white tinged with rufous at base. Underside of fore wing fuscous, the terminal area whitish; hind wing white with slight somewhat diffused fuscous streaks along the veins.

Hab. Italy; Dalmatia; Bulgaria; Asia Minor, Pontus, Leech Coll., Taurus; Syria, Leech Coll. *Exp.* 28–32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 253; Hffm. Raup. p. 125.

Reddish yellow with pale dorsal line and four slender lateral black lines. Food-plant, *Dianthus*.

Genus CLEOPHANA.

	Type.
Cleophana, Boisd. Ind. Meth. p. 151 (1840)	*bætica*.

Proboscis fully developed; palpi upturned, the 2nd joint clothed with long hair, the 3rd rather long; frons with corneous prominence with raised edges and corneous process in centre hollowed out at extremity; eyes large, rounded; antennæ of male typically with moderate branches decreasing to base and extremity; head and thorax clothed with hair only, the vertex of head with large crest of hair, shoulders with crests of hair, pro- and metathorax with double crests, patagia with curled-up tufts at extremity; pectus and tibiæ clothed with long hair; abdomen with some rough hair at base, usually a large crest on 2nd segment and lateral fringes of hair. Fore wing with the costa rather concave, the termen evenly curved, the inner margin lobed near base, the tornus with scale-tooth; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

Sect. I. Antennæ of male with moderate branches decreasing to base and apex.

A. Fore wing with the cilia chequered grey and white.
  a. Fore wing with prominent white fascia in submedian fold on medial area ..... *chabordis*.
  b. Fore wing with slight whitish streak in submedian fold on medial area ..... *bætica*.
B. Fore wing with the cilia not chequered grey and white... *pectinicornis*.

2193. Cleophana chabordis.

Cleophana chabordis, Oberth. Ét. Ent. i. p. 47, pl. 2. f. 2 (1876); Staud. Cat. Lep. pal. p. 214.
Cleophana albicans, Staud. Cat. Lep. pal. p. 214 (1901).

Head and thorax white mixed with pale grey-green, brown, and black; abdomen white dorsally tinged with brown and fuscous. Fore wing pale grey-green with some cupreous-red suffusion beyond postmedial line except towards costa, the median nervure and veins 6 to 2 slightly streaked with black; the extreme base white with a slight black streak in base of cell; a white streak above median nervure before the antemedial line, which is black defined by white on inner side, strongly angled outwards in cell and slightly in submedian fold, angled inwards on vein 1, an oblique white streak from it in submedian fold to postmedial line at vein 1; a white discoidal lunule defined by black on outer side, angled inwards on median nervure and with its upper extremity produced; postmedial line white with black points on inner side, stronger at costa, incurved at discal fold and strongly below vein 4, a white point beyond it on costa; subterminal line represented by a fine oblique white line from costa to vein 6, where it is angled outwards, then by traces of a line forming distinct angles to termen on veins 4, 3, 2; cilia grey-green mixed with blackish especially at middle and intersected with white. Hind wing with the basal half and inner area white, the terminal half fuscous brown; cilia white, chequered with brown at base; the underside white slightly tinged with rufous on basal half of costal area and irrorated with fuscous on terminal area, traces of a postmedial series of dark spots on the veins.

Ab. 1 *albicans*. Head, thorax, and abdomen white; fore wing much whiter, the markings indistinct.

Hab. Algeria, Biskra, Hammam-es-Salahin (*Walsingham*), 3 ♂, 4 ♀; Tunis, 1 ♂; Palestine; Persian Gulf, Fao (*Cumming*), 6 ♂, 3 ♀. *Exp.* 20–24 millim.

2194. Cleophana bætica.

Cleophana bætica, Rmbr. Faun. Andal. ii. pl. 18. f. 4 (1839); Staud. Cat. Lep. pal. p. 214.
Cleophana penicillata, Boisd. Ind. Meth. p. 151 (1840), non descr.; Herr.-Schäff. Eur. Schmett. ii. p. 298 (1842).
Cleophana chamorrhini, Dup. Lép. Fr., Suppl. iii. p. 379, pl. 34. f. 6 (1840).

Head and thorax greenish grey mixed with pale rufous hair;

tegulæ with rufous medial line defined by whitish above and some black at middle of tips; patagia with white bar; metathoracic crest tipped with black; abdomen whitish tinged with brown. Fore wing greenish grey with some rufous suffusion beyond postmedial line; a black point at base of cell; antemedial line double, red-brown filled in with white, angled outwards in cell and submedian fold and emitting slight dark brown streaks on each side at the veins; claviform and orbicular represented by short dark brown

Fig. 19.—*Cleophana bætica*, ♂. ½.

streaks with some white at extremity; reniform a narrow white lunule; postmedial line double, red-brown filled in with white and with short dark brown streaks before and beyond it at the veins, bent outwards below costa, incurved at discal fold and below vein 4, some white points beyond it on costa; traces of a white subterminal line, incurved at discal fold and below vein 3 and with white streaks beyond it on terminal area and intersecting the cilia which are brown. Hind wing reddish brown, the basal and inner areas yellowish, the veins of terminal half rather darker; cilia white chequered with brown at base; underside whitish, the basal and terminal areas suffused with red-brown; an indistinct rather diffused postmedial line with short brown streaks on the veins.

Hab. S.E. France; Spain, Andalusia, Leech Coll., Castile, Zeller and Leech Colls., Seville (*Irby*), 1 ♀; Sardinia; Algeria; Georgia, 1 ♀; Asia Minor, Taurus; Syria, Mardin; Palestine. *Exp.* 32–34 millim.

Larva. Hffm. Raup. p. 125.

Green with dorsal yellow line; lateral and stigmatal lines red; stigmata yellow with dark rings. Food-plant, *Helianthemum*.

2195. Cleophana pectinicornis. (Plate XCIX. fig. 2.)

Cleophana pecticornis, Staud. Stett. ent. Zeit. 1859, p. 215; Rmbr. Cat. Lep. S. And. pl. 12. f. 4; Staud. Cat. Lep. pal. p. 214.

♂. Head and thorax brown mixed with black, especially on head and front of patagia; tegulæ white mixed with brown, with slight black patches at base and brown line near tips; patagia with white line near upper edge defined by a brown line above; abdomen whitish irrorated with red-brown and with slight segmental lines. Fore wing whitish suffused with red-brown, the veins streaked with black to the postmedial line; the basal area irrorated with fuscous; the base of cell white with a slight black streak; a fine

black streak in base of submedian fold; subbasal line represented by a slight striga from costa; antemedial line double, the inner line indistinct, obliquely excurved from costa to median nervure, where it is angled inwards, then excurved in interspaces and angled inwards on vein 1, the area beyond it fuscous black to the medial line, which is oblique to median nervure and slightly angled inwards in submedian fold; orbicular represented by a slight pale spot in upper part of cell; reniform a narrow whitish lunule with fuscous centre; postmedial line black, excurved below costa, incurved at discal fold, oblique below vein 4 and angled inwards in submedian fold, a fuscous patch beyond it on costal area with two white points on costa; subterminal line white, diffused, curved, slightly angled inwards in submedian fold; a slightly waved brown terminal line; cilia brownish ochreous, dark at tips. Hind wing white, the veins, costal and terminal areas suffused with brown; a dark terminal line; the underside with black discoidal lunule and postmedial series of minute streaks on the veins showing through to upperside.

Hab. Spain, Andalusia, Murcia; Algeria; Tunis, 1 ♂. *Exp.* 32 millim.

Sect. II. Antennæ of male with very short branches, serrate at base and apex.

A. Fore wing with the termen and cilia intersected by white and black ..... *jubata*.
B. Fore wing with the tips of cilia chequered white and brown ..... *opposita*.

2196. Cleophana jubata.

Cleophana jubata, Oberth. Ét. Ent. xiii. p. 31, pl. 6. f. 40 (1890); Staud. Cat. Lep. pal. p. 214.

Head, thorax, and abdomen whitish mixed with brown and fuscous; tarsi fuscous with slight white rings. Fore wing whitish suffused with reddish brown and irrorated with fuscous; antemedial line double, black filled in with whitish, waved, angled inwards in

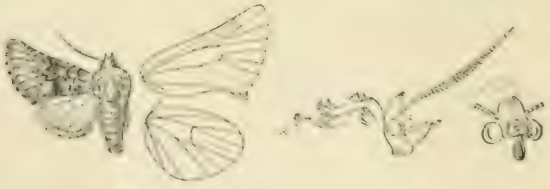


Fig. 20.—*Cleophana jubata*, ♂. ♀.

cell and on vein 1; a diffused blackish medial shade; a slight whitish discoidal lunule; postmedial line black defined by whitish on outer side, reduced to a series of black points on veins 5 to 2, angled outwards below costa, and inwards at discal fold, below vein 4 bent inwards to below cell, then oblique to inner margin, some brown

suffusion beyond it on costa with two white points on it; the veins of terminal area streaked with black, defined by short white streaks on each side: cilia chequered brown and white and intersected with black. Hind wing white, the veins, costal area, and terminal half except inner area suffused with brown; cilia white mixed with brown; the underside white, the costal and terminal areas irrorated with brown, a slight spot at upper angle of cell.

Hab. Algeria; Tunis, 1 ♂, 1 ♀. *Exp.* 22 millim.

2197. Cleophana opposita. (Plate XCIX. fig. 3.)

Cleophana opposita, Led. Ann. Soc. Ent. Belge, xiii. pp. 34, 47, pl. 1. f. 12 (1870); Staud. Cat. Lep. pal. p. 214.

Head and thorax grey mixed with dark brown; vertex of head and base of tegulæ reddish brown, tips of tegulæ and a line in front and near upper edge of patagia blackish; tarsi dark brown with slight pale rings; abdomen red-brown mixed with some grey, slight dorsal segmental black lines on medial segments. Fore wing grey, the antemedial area suffused with red-brown, the basal half of medial area fuscous black, the veins slightly streaked with black except on terminal area; subbasal line represented by a slight black striga from costa; antemedial line black, oblique from costa to median nervure, where it is slightly angled inwards, excurved in submedian interspace and slightly angled inwards on vein 1; a minute black discoidal striga; postmedial line indistinct and somewhat reduced to points on the veins, slightly bent outwards below costa, angled inwards in discal fold and incurved below vein 4, a slight diffused brown band beyond it expanding towards costa, on which are two oblique grey striæ, angled inwards in discal fold and incurved below vein 3, followed by a very indistinct diffused grey subterminal line excurved above and below discal fold; a slightly waved dark terminal line; cilia red-brown at base, chequered grey and fuscous at tips. Hind wing reddish brown with indistinct pale medial band; cilia brown at base, greyish with dark points at tips; underside whitish suffused with brown and irrorated with fuscous except inner half to postmedial line, a slight dark discoidal lunule and postmedial line with minute dark streaks on the veins.

Hab. Bulgaria; Macedonia; Armenia; Asia Minor, Pontus, 1 ♂, Taurus, 1 ♂, 2 ♀; Syria, Leech Coll., 3 ♂, Antioch, Mardin; Bagdad (*Loftus*), 1 ♀. *Exp.* 26–30 millim.

Sect. III. Antennæ of male serrated.

A. Abdomen with dorsal crest on 2nd segment.

a. Fore wing with the angle of postmedial line in submedian fold connected with the antemedial line by a short black streak ..... *raulogeri*.

b. Fore wing with the angle of postmedial line in submedian fold not connected with the antemedial line by a black streak ..... *diffluens*.

2198. Cleophana vaulogeri.

Cleophana vaulogeri, Staud. Iris, xii. p. 378, pl. 5. f. 9 (1899); id. Cat. Lep. pal. p. 214.

Head and thorax grey-white mixed with brown and black; tegulæ with black lines at middle and near tips; patagia with strong black lines near front and upper edge; pro- and metathoracic crests tipped with black; tarsi banded black and white; abdomen grey-white tinged with reddish brown and irrorated with black. Fore wing grey tinged with brown and irrorated with black, the veins slightly streaked with black; slight black streaks in base of cell and submedian fold; antemedial line double, the inner line indistinct, obliquely excurved from costa to median nervure, angled outwards in submedian fold, then sinuous; orbicular very small, with black centre and whitish annulus, oblique elliptical; reniform

Fig. 21.—*Cleophana vaulogeri*, ♂. ½.

small, whitish with black lunule in centre; a diffused black medial shade, oblique below the cell; postmedial line double, the outer line indistinct, strongly angled outwards below costa, angled inwards in discal fold, oblique below vein 4, and very strongly angled inwards to antemedial line in submedian fold, a band of blackish suffusion beyond it, broad towards costa and with two pale points on costa, excurved at middle; a faint, pale, rather broad subterminal line, incurved at discal fold, then oblique; a fine black terminal line; cilia grey with black line through them and black tips. Hind wing with the basal and inner areas whitish, the veins, costal area, and terminal half fuscous brown; a fine black terminal line; cilia whitish intersected with brown; the underside white, the costal and terminal areas irrorated with fuscous, a black discoidal lunule and postmedial series of fuscous spots on the veins.

Hab. Algeria, Biskra, Hammam-es-Salahin (*Walsingham*), 5 ♂, 1 ♀. *Exp.* 28 millim.

2199. Cleophana diffluens. (Plate XCIX. fig. 4.)

Cleophana diffluens, Staud. Berl. ent. Zeit. 1870, p. 121; id. Cat. Lep. pal. p. 214.

Cleophana versicolor, Staud. Cat. Lep. pal. p. 214 (1901).

Head and thorax dark brown mixed with grey and black; tegulæ with dark line near tips which are black; patagia with grey lines defined by black near front and upper edge; abdomen greyish

suffused with brown, the dorsal crests and a patch on terminal segment dark. Fore wing greyish suffused with brown, the basal half of medial area fuscous brown, the veins slightly streaked with black to postmedial line; a slight black streak in base of cell; subbasal line represented by black striæ from costa and cell; antemedial line black, oblique, and slightly sinuous from costa to median nervure, excurved in submedian interspace and above inner margin and angled inwards on vein 1; orbicular a slight pale spot with black centre in upper part of cell; reniform a slight grey lunule with black centre; antemedial line bent outwards below costa, angled inwards at discal fold, excurved to vein 2 and strongly angled inwards in submedian fold, a fuscous-brown patch beyond it on costa; a slightly waved black terminal line; cilia pale reddish brown. Hind wing reddish brown, the interspaces of inner half of basal area whitish; cilia pale brown, whitish at tips; the underside whitish, the costal and terminal areas suffused and irrorated with brown, a slight discoidal lunule and curved postmedial line.

Ab. 1. *versicolor*. Smaller; fore wing tinged with ochreous on subbasal and terminal areas.—Algeria.

Hab. Spain, Andalusia, Leech Coll., Malaga, Zeller Coll.; Algeria.
Exp. 26–30 millim.

B. Abdomen without dorsal crest on 2nd segment.
  a. Fore wing with the angle of postmedial line in submedian fold connected with the antemedial line by a short black streak ..... *yvani*.
  b. Fore wing with the angle of postmedial line in submedian fold not connected with the antemedial line by a black streak ..... *marocana*.

2200. Cleophana yvani.

Xylina yvanii, Dup. Ann. Soc. Ent. Fr. ii. p. 257, pl. 9. f. *c* (1833); Geyer, Eur. Schmett., Noct. f. 838; Dup. Lép. Fr., Suppl. iii. p. 389, pl. 35. f. 3; Staud. Cat. Lep. pal. p. 214.
Cleophana korbi, Staud. Iris, vii. p. 280 (1894).

Head, thorax, and abdomen red-brown; tegulæ with white line near tips defined on each side by blackish; patagia with curved

Fig. 22.—*Cleophana yvani*, ♂. ½.

white line near upper edge defined by black above; tarsi fuscous, ringed with white. Fore wing grey irrorated with fuscous and tinged with red-brown before middle of antemedial line and beyond

the postmedial line: a slight black streak in base of cell; antemedial line black, oblique from costa to submedian fold, where it is strongly angled outwards, then obliquely incurved; orbicular and reniform very small with fuscous centres and greyish-white annuli, the former round; a fuscous medial shade; postmedial line black, angled outwards below costa and inwards in discal fold, then excurved and very strongly angled inwards to antemedial line in submedian fold, a diffused brownish band beyond it expanding to costa, where there are two white points on it, excurved at middle; the veins of terminal area slightly streaked with black; an indistinct oblique whitish subterminal band from costa to vein 6; a slightly waved black terminal line; cilia brown at base, chequered whitish and brown at tips. Hind wing reddish brown, the veins and terminal area tinged with fuscous; cilia brown at base, whitish at tips; the underside whitish irrorated and suffused with red-brown, a small discoidal spot and indistinct diffused postmedial line.

Ab. 1. *corbi*. Paler; fore wing without the black streak in base of cell.

Hab. S. France, Zeller and Leech Colls.; Spain, Aragon, Castile, Murcia. *Exp.* 24 millim.

Larva. Kirby, Butt. & Moths Eur. p. 253.

Yellowish white with four red lines. Food-plant, seeds of *Helianthemum*.

2201. Cleophana marocana. (Plate XCIX. fig. 5.)

Cleophana marocana, Staud. Cat. Lep. pal. p. 214 (1901).

♂. Head and thorax bright red-brown; antennæ whitish at base; tegulæ slightly tipped with black; tarsi with slight pale rings; abdomen silky brown tinged with fuscous dorsally. Fore wing bright red-brown, the veins slightly darker except on terminal area; basal area with slight fuscous irroration; a slight dark streak in base of submedian fold; antemedial line indistinct, oblique from costa to submedian fold, slightly angled outwards below costa and inwards on vein 1; reniform a whitish lunule with dark centre; postmedial line slightly defined by greyish suffusion on each side, more strongly on inner area, bent outwards below costa, angled inwards in discal fold and strongly in submedian fold; traces of a pale dentate subterminal line incurved at discal fold and below vein 3; a fine slightly waved dark terminal line; cilia red-brown, the tips faintly chequered pale and red-brown. Hind wing with the basal half whitish suffused and irrorated with red-brown, the terminal half fuscous brown; cilia pale red-brown; the underside with black discoidal lunule and rather diffused postmedial line.

Hab. Morocco, Forest of Marmora (*Meade-Waldo*), 3 ♂. *Exp.* 24–26 millim.

Genus **METALOPHA**.

Type.
Metalopha, Staud. Iris, iv. p. 313 (1891) ..... *liturata*.

Proboscis fully developed; palpi obliquely upturned, fringed with rough hair in front, the 3rd joint short; frons with large corneous prominence with raised edges, its lower edge produced into a trilobate process; eyes large, rounded, antennæ of male simple, laminate; head and thorax clothed with rough hair, the vertex of head with large crests, the pro- and metathorax with double crests; pectus and tibiæ clothed with long hair; abdomen with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the apex somewhat produced, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 rather strong from below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Head, thorax, and fore wing largely suffused with purplish pink..... ..... *gloriosa*.
B. Head, thorax, and fore wing olive-brown and white without pink suffusion ..... *liturata*.

2202. **Metalopha gloriosa**. (Plate XCIX. fig. 6.)

Metalopha gloriosa, Staud. Iris, iv. p. 314, pl. 4. f. 7 (1891); id. Cat. Lep. pal. p. 223.

♂. Head and thorax purplish pink more or less mixed with grey-white; abdomen grey-white mixed with fuscous and olive-yellow, the lateral fringes and ventral surface purplish pink. Fore wing with the veins purplish grey; the basal area dark olive-green; the antemedial line fine, grey, oblique from costa to submedian fold, then slightly incurved; the medial area suffused with purplish pink and grey with some dark irroration; orbicular and reniform very small, defined by blackish, the former round, the latter narrow; postmedial line grey, very oblique, slightly excurved from costa to vein 4, then slightly incurved, an olive-green band beyond it; the terminal area purplish pink with some dark irroration; a terminal series of slightly darker lunules; cilia purplish pink and grey with some dark scales. Hind wing olive-brown; a discoidal spot slightly defined by white; a faint diffused medial greyish band; terminal area slightly tinged with pink: cilia pink with series of brown spots; the underside pink or whitish suffused with pink and with some dark irroration, a dark discoidal point.

Hab. Asia Minor, Taurus, 1 ♂; Syria, Mardin; Palestine; Mesopotamia, 1 ♂. *Exp.* 30 millim.

2203. **Metalopha liturata**.

Megalodes liturata, Christ. Rom. Mém. iii. p. 89, pl. 4. f. 10 (1887); Staud. Cat. Lep. pal. p. 223.
Metalopha plusina, Staud. Iris, iv. p. 313, pl. 4. f. 8 (1891).

♂. Head, thorax, and abdomen white mixed with olive-green.

Fore wing white suffused with olive-green and slightly irrorated with blackish; the veins white; subbasal line represented by an oblique white bar from costa; an antemedial white band, excurved below costa, then oblique; orbicular and reniform rather small, defined by white, the former round, the latter oblique oblong; an

Fig. 23.—*Metalopha liturata*, ♂. ½.

oblique postmedial white band, slightly excurved from costa to vein 4, then slightly incurved; a curved subterminal white band; a crenulate white line enclosing the terminal series of olive lunules; cilia white with series of olive spots. Hind wing white irrorated with pale fuscous; diffused subterminal and terminal pale fuscous bands; the underside white.

Hab. Syria, Antioch; Mesopotamia, 1 ♂; Persia; W. Turkestan, Turcomania. *Exp.* 28 millim.

Genus **AMEPHANA**, nov.

Type, *A. anarrhini*.

Proboscis fully developed; palpi upturned to vertex of head and clothed with long hair, the 3rd joint short or long and dilated at extremity; frons with corneous prominence with raised edges, its lower edge produced to a shovel-shaped process; eyes large, rounded; antennæ of male pectinate or simple, laminate; head and thorax clothed with rough hair only, the vertex of head with large crest, the pro- and metathorax with double crests; tibiæ fringed with long hair; abdomen with some rough hair at base, large crest on 2nd segment and lateral fringes of hair. Fore wing with the costa somewhat concave, the termen evenly curved, the inner margin lobed near base, the tornus with scale-tooth; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. 1. Antennæ of male bipectinate, the branches decreasing to base and apex; palpi with the 3rd joint long and dilated at extremity.

2204. Amephana varionis.

Cleophana varionis, Oberth. Ét. Ent. i. p. 48, pl. 2. f. 3 (1876); Staud. Cat. Lep. pal. p. 214.

♂. Head and thorax whitish tinged with emerald-green and slightly mixed with fuscous; the crests on vertex of head, pro- and metathorax, and the patagia tipped with rufous; abdomen

white dorsally tinged with fuscous especially at base. Fore wing brilliant emerald-green with some fuscous irroration especially on terminal half; antemedial line white, angled outwards in cell and submedian fold and inwards above vein 1, then outwardly to inner margin; a diffused white medial line from cell to inner margin, incurved, then angled outwards on vein 1; discocellulars white;

Fig. 24.—*Amephana varionis*, ♂. ½.

postmedial line indistinct whitish, bent outwards below costa, incurved at discal fold and strongly below vein 4; subterminal line white, emitting streaks to apex on veins 9, 8, angled outwards to termen on veins 7, 6, 4, 3, 2; cilia chequered white and fuscous. Hind wing whitish suffused with fuscous, leaving an ill-defined whitish medial band; cilia chequered white and fuscous; the underside white slightly irrorated with fuscous, diffused antemedial and postmedial bands slightly incurved at middle, a discoidal point.

Hab. Algeria; Tunis, 1 ♂. *Exp.* 28 millim.

Sect. II. Antennæ of male simple, laminate; palpi with the 3rd joint short.

A. Head, thorax, and fore wing with the ground-colour yellow. *anarrhini.*
B. Head, thorax, and fore wing with the ground-colour grey ... *dejeani.*

2205. Amephana anarrhini.

Cleophana anarrhini, Dup. Lép. Fr., Suppl. iii. p. 387, pl. 35. f. 2 (1836); Herr.-Schäff. Eur. Schmett., Noct. f. 157; Staud. Cat. Lep. pal. p. 214.

Head and thorax bright rufous mixed with some yellow; abdomen brown with slight whitish segmental rings more distinct on ventral

Fig. 25.—*Amephana anarrhini*, ♂. ½.

surface, the dorsal crest rufous. Fore wing yellow suffused with bright rufous, leaving whitish streaks in the interspaces, the veins with dark streaks; antemedial line double filled in with whitish,

curved, the outer line black, minutely dentate; a rather diffused fuscous medial line excurved at lower angle of cell; reniform a slight white lunule; postmedial line black defined by white on outer side, slightly bent outwards below costa, then broken up into points and incurved at discal fold, below vein 4 incurved to below end of cell, then continuous and outwardly oblique with slight rufous line beyond it, two white points beyond it on costa; the interspaces of terminal area more distinctly streaked with white; cilia chequered brown and white. Hind wing fuscous brown, the inner area whitish; cilia white tinged with brown; the underside whitish, the basal and terminal areas irrorated with brown, an indistinct diffused postmedial line with slight dark streaks at the veins.

Hab. S.E. France, Sand, Frey, and Leech Colls.; Spain, Murcia. *Exp.* 26 millim.

2206. Amephana dejeani.

Noctua dejeanii, Dup. Lép. Fr. vii. p. 238, pl. 115. f. 2 (1827); id. Suppl. iii. pl. 35. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 156; Frr. Neue Beitr. pl. 256. f. 1; Staud. Cat. Lep. pal. p. 214.

Head and thorax pale brownish grey mixed with some black; patagia with whitish patches edged with black; legs with red-brown and white hair; abdomen ochreous dorsally suffused with brown. Fore wing brownish grey suffused with cupreous red-brown before the antemedial and beyond the postmedial line; a slight black streak in base of cell; antemedial line double filled in with white, very oblique from costa, excurved to submedian fold, angled inwards above vein 1, then strongly excurved; claviform elliptical, extending from the antemedial to the postmedial line, with brown centre and white annulus defined by black below and at extremity; orbicular small, round, confluent with antemedial line, with slight white annulus; reniform small with brown centre and white annulus, rather produced at extremities; postmedial line defined by white on outer side, angled inwards below costa, oblique to vein 6, incurved at discal fold and very strongly below vein 4 to below cell, two white points beyond it on costa; the veins of terminal area streaked with black, defined on each side by white forming sagittate marks and a V-shaped mark at apex; cilia brown intersected with white. Hind wing ochreous, the veins and terminal half reddish brown; cilia chequered brownish white and red-brown; the underside ochreous white, the veins brown, a discoidal lunule, indistinct diffused postmedial line, and diffused subterminal band.

Hab. S. France, Zeller, Frey, and Leech Colls.; Spain, Andalusia; Italy; Greece; Algeria; Asia Minor, Pontus, Taurus, 1 ♂. *Exp.* 22–24 millim.

Larva. Kirby, Butt. & Moths Eur. p. 253; Hffm. Raup. p. 125.

Pale yellow with red subdorsal lines spotted with white and red spiracles. Food-plant, *Heliantheman*.

Genus **OMPHALOPHANA**, nov.

Type, *O. antirrhini.*

Proboscis fully developed; palpi upturned to vertex of head and clothed with long hair, the 3rd joint rather long; frons with small rounded prominence with corneous plate below it; eyes large, rounded; antennæ of male typically with laminate serrations; head and thorax clothed with rough hair and hair-like scales, the vertex of head with large crest, the tegulæ with dorsal ridge, the pro- and metathorax with double crests; tibiæ fringed with long hair; abdomen with some rough hair at base, large crests on basal segments and lateral fringes of hair. Fore wing with the costa almost straight, the termen obliquely curved, the inner margin slightly lobed near base; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male with laminate serrations.

A. Fore wing with the cilia intersected by white streaks.
  a. Fore wing with the antemedial line erect, minutely waved ..... *antirrhini.*
  b. Fore wing with the antemedial line excurved and approximated to the postmedial line below cell.
    a^1. Fore wing with small orbicular and reniform stigmata with grey annuli ..... *serrata.*
    b^1. Fore wing with the orbicular an oblique white lunule, the reniform absent ..... *serratula.*
B. Fore wing with the cilia not intersected with white ..... *pauli.*

2207. Omphalophana antirrhini.

Noctua antirrhini, Hübn. Eur. Schmett., Noct. f. 253 (1827); Dup. Lép. Fr. vii. p. 264, pl. 116. f. 6; Frr. Beitr. ii. pl. 172; Staud. Cat. Lep. pal. p. 213.

Head and thorax grey-white mixed with rufous and on thorax with fuscous, the crests on head and prothorax darker at tips;

Fig. 26.—*Omphalophana antirrhini*, ♂. ½.

tarsi slightly ringed with white; abdomen brown with slight white segmental rings, the dorsal crests blackish, the ventral surface with more white. Fore wing pale olive-grey suffused with red-brown, especially on medial area and beyond postmedial line; antemedial

line double, the outer line black, minutely waved; orbicular and reniform small with fuscous centres and white annuli slightly defined by black, the former round; an indistinct diffused brown medial line; postmedial line black defined by whitish on outer side, slightly bent outwards below costa, dentate at veins 6, 4, 3, 2, 1, incurved at discal fold and below vein 4 to near origin of vein 2, then oblique; the interspaces of terminal area with black streaks not reaching termen with whitish streaks above and below, most of them to termen; cilia chequered dark brown and white. Hind wing dark reddish brown with indistinct diffused whitish medial band; cilia white chequered with brown at base; the underside with the white band more distinct and emitting a streak in submedian fold to base, the termen white.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Austria, Frey and Leech Colls.: Hungary, Leech Coll.; Spain; Italy; Balcans; Armenia; Asia Minor; Syria, Leech Coll., Mardin. *Exp.* 26–32 millim.

Larva. Kirby, Butt. & Moths Egr. p. 253; Hffm. Raup. p. 125, pl. 33. f. 7.

Green with black points and white dorsal line. Food-plants: *Antirrhinum* and *Scabiosa ochroleuca*. 6.

2208. Omphalophana serrata.

Cleophana serrata, Treit. Schmett. Eur., Suppl. x. (2) p. 121 (1835); Geyer, Eur. Schmett., Noct. f. 871; Feisth. Ann. Soc. Ent. Fr. vi. p. 299, pl. 12. f. 2; Dup. Lép. Fr., Suppl. iii. p. 426, pl. 37. f. 5; Rmbr. Faun. Andal. pl. 18. f. 6; Mill. Icones, ii. pl. 66. ff. 1, 2; Staud. Cat. Lep. pal. p. 213.
Cleophana arctata, Guen. Noct. ii. p. 161 (1852).

♂. Head and thorax purplish grey mixed with brown and black; tegulæ with slight black lines at middle and near tips defined by white behind; tarsi with slight whitish rings; abdomen brown mixed with whitish. Fore wing purplish grey suffused with yellow-brown beyond the postmedial line and on terminal area; a black streak in base of cell and a subbasal streak below cell on diffused white fasciæ; antemedial line double filled in with white and with some blackish suffusion before it, curved and slightly angled inwards below costa; orbicular and reniform small, approximated, with fuscous centres and slight white annuli defined by black, the former round; an indistinct medial line; postmedial line double filled in with white, bent outwards below costa, then produced to short white streaks on the veins followed by black streaks, incurved at discal fold and below vein 4 to below orbicular and approximated to antemedial line, some oblique white striæ from costa beyond it; a series of white streaks on terminal area and cilia, forking on each side of veins, in the interspace below vein 4 connected inwardly and forming a lunule. Hind wing with the basal half whitish tinged with brown, the terminal half brown, narrowing to tornus; the veins darker; cilia white chequered with pale brown on apical half; the underside whitish slightly irrorated with brown, a slight discoidal lunule, the veins and a diffused subterminal band brown.

Hab. Spain, Andalusia, Cadiz (*Walsingham*), 1 ♂; Sardinia; Sicily; Algeria. *Exp.* 30 millim.

Larva. Kirby, Butt. & Moths Eur. p. 253; Hffm. Raup. p. 125.

Greenish with yellow dorsal and lateral lines. Food-plant, Scabious. 5.

2209. Omphalophana serratula. (Plate XCIX. fig. 7.)

Cleophana serratula, Staud. Stett. ent. Zeit. 1888, p. 38; id. Cat. Lep. pal. p. 213.

♂. Head and thorax white mixed with brown and black; the tufts on frons and vertex of head and the tegulæ with dark tips; tarsi with slight white rings; abdomen whitish tinged with brown. Fore wing whitish suffused with brown; the veins streaked with black; a white fascia in base of cell; a diffused white fascia below the cell with black subbasal streak in submedian fold and emitting a white streak to termen; antemedial line double filled in with white, excurved, very oblique towards costa and inner margin and slightly incurved at submedian fold; orbicular a very oblique somewhat lunulate white mark in end of cell; reniform absent; postmedial line black defined by white on outer side, the black reduced to points on the veins of costal half, bent outwards below costa and below vein 4 bent inwards to lower angle of cell, then oblique, slightly angled outwards in submedian fold and approximated to antemedial line; the terminal area with white streaks on each side of the veins and on cilia, the black streaks on the veins extending to basal half of cilia, through which there is a slight dark line. Hind wing whitish tinged with brown, the terminal half suffused with brown; cilia white tinged with brown at base; the underside white slightly irrorated with brown, an indistinct curved postmedial line.

Hab. W. Turkestan, Turcomania, 1 ♂, Ferghana, Issyk Kul; E. Turkestan, Ili. *Exp.* 30 millim.

2210. Omphalophana pauli.

Cleophana pauli, Staud. Iris, iv. p. 306, pl. 4. f. 4 (1891); Meade-Waldo, Trans. Ent. Soc. 1905, p. 383, pl. 19. f. 11; Staud. Cat. Lep. pal. p. 213.

♀. Head and tegulæ pale rufous, the latter grey and dark brown at tips; thorax grey and dark brown; pectus and legs pale rufous; abdomen reddish brown. Fore wing grey suffused with brown; a double curved antemedial line; claviform small, defined by white; orbicular and reniform very small, dark brown, the former round, placed on a white patch filling end of cell and extending to inner side and upper edge of reniform; postmedial line blackish, rather diffused, bent outwards below costa, below vein 4 strongly incurved and below submedian fold approximated to antemedial line; traces of a subterminal series of brown and white dentate marks; cilia chequered brown and white. Hind

wing fuscous-brown with a reddish tinge: cilia white tinged with brown at base: the underside whitish suffused with brown, traces of a discoidal spot and curved postmedial line.

Hab. Morocco, Marmora Forest (*Meade-Waldo*), 1 ♀; Palestine. *Exp.* 26 millim.

Sect. II. Antennæ of male ciliated.

2211. Omphalophana anatolica.

Noctua serrata, Frr. Neue Beitr. iii. pl. 256. f. 1 (nec Treit.).
Calophasia anatolica, Led. Noct. Eur. p. 227 (1857); Calb. Iris, i. p. 256, pl. 12. f. 11; Staud. Cat. Lep. pal. p. 213.

Head and thorax white mixed with black; tegulæ with rather diffused black medial line defined by white behind; abdomen grey mixed with fuscous, the dorsal crests with some black. Fore wing grey suffused and irrorated with fuscous brown, the medial area darker; a black streak in base of submedian fold; antemedial line double, curved; traces of a small claviform defined by black; orbicular and reniform very small and indistinct, with brownish centres and whitish annuli slightly defined by black, the former

Fig. 27.—*Omphalophana anatolica*, ♂. ½.

round; a diffused black medial line; postmedial line indistinctly double filled in with white, bent outwards below costa, then dentate, incurved below vein 4; the veins of terminal area with slight dark streaks, the interspaces with black streaks towards termen between veins 8 and 5 and below 2; cilia chequered fuscous and white. Hind wing pale suffused with fuscous brown, the terminal area darker; cilia chequered white and fuscous; the underside grey irrorated with fuscous, the terminal area suffused with fuscous, a small discoidal spot and postmedial series of slight streaks on the veins.

Hab. Italy; S. Turkey; Rhodes; Asia Minor, Bithynia, Lydia; Palestine; W. Turkestan, Turcomania, Askhabad, 1 ♂. *Exp.* 30 millim.

Genus OXICESTA.

	Type.
Oxicesta, Hübn. Verz. p. 144 (1827)	*geographica*.
Cilidia, Boisd. Ind. Meth. p. 68 (1840)	*geographica*.

Proboscis absent; palpi obliquely porrect, the 2nd joint fringed with long hair below; frons smooth; eyes large, rounded; antennæ of male bipectinate with short branches decreasing to base and apex; head and thorax clothed with

hair only, the metathorax with double crest, the patagia with curled-up hair at extremity; tibiæ fringed with long hair; abdomen with some rough hair at base, a large crest on basal segment and lateral fringes of hair. Fore wing with the costa nearly straight, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

A. Hind wing of male white with brown postmedial line and subterminal band ..... *geographica.*
B. Hind wing of male uniform fuscous brown ..... *chamænices.*

2212. Oxicesta geographica.

Noctua geographica, Fabr. Mant. Ins. ii. p. 167 (1787); Boisd. Ic. pl. 65. f. 5; Dup. Lép. Fr. vi. pl. 84. f. 5; Frr. Neue Beitr. vii. pl. 638; Staud. Cat. Lep. pal. p. 134.
Bombyx austera, Scriba, Beitr. Ins. p. 176, pl. 7. f. 5 (1791); Esp. Schmett. iv. pl. 191. ff. 4–6 (1796).
Bombyx sericina, Hübn. Beitr. ii. 1, pl. 4. f. Y (1827).

Head and thorax yellowish white mixed with pale rufous; palpi at sides, tegulæ at middle and outer edge of tegulæ and patagia dark rufous; abdomen yellowish white suffused with dark brown. Fore wing yellowish white, the basal and postmedial areas suffused with rufous, the latter extending to termen below veins 6 and 3; the basal part of medial area suffused with rufous extending to just before postmedial line beyond and below lower angle of cell; subbasal line oblique defined by white on inner side and ending at submedian fold; antemedial line double except towards costa, dark brown filled in with white, slightly angled outwards below costa

Fig. 28.—*Oxicesta geographica*, ♂. ½.

and in cell and inwards below cell, then outwardly oblique, an oblique dark brown mark beyond it in cell; traces of a pale discoidal line; postmedial line dark brown except towards costa, defined by white on inner side, with some dark brown before it at costa and below lower angle of cell, minutely dentate, angled outwards at vein 4, then bent inwards to below end of cell and outwardly oblique to inner margin; some slight wedge-shaped brown marks in interspaces on termen from above vein 6 to below 2; cilia chequered yellowish white and brown. Hind wing yellowish white, the costal area tinged with brown to the postmedial line, which is excurved at middle and above inner margin;

a diffused brown subterminal band: cilia intersected with brown towards apex; the underside with slight discoidal spot and distinct diffused postmedial line.

Hab. Austria, Galicia; Hungary, Zeller, Frey, and Leech Colls.; S. Russia; Turkey. *Exp.* 24–32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 155; Hffm. Raup. p. 74, pl. 21. f. 18.

Black with hairy warts and two dorsal white lines; the sides white spotted with black and with yellow lateral line: segmental incisions bordered with reddish yellow. Food-plant, *Linaria vulgaris*. 6–8.

2213. Oxicesta chamœnices.

Bombyx sericina, Hübn. Eur. Schmett., Bomb. f. 259 (1827); nec id. Beitr. ii.
Noctua chamœnices, Herr.-Schäff. Eur. Schmett., Noct. f. 568 (1845).
Colocasia chamæsyces, Guen. Noct. i. p. 40 (1852); Staud. Cat. Lep. pal. p. 134.

Head and thorax yellowish white tinged with rufous in parts, the upper half of patagia and dorsum of thorax deep red-brown; abdomen dark brown with some whitish hair and slight pale segmental lines. Fore wing yellowish white almost wholly suffused with dark red-brown; subbasal line represented by slight dark spots below costa and cell defined by whitish on outer side; antemedial line dark brown, rather diffused, defined by whitish on inner side, oblique from costa to submedian fold, then outwardly oblique; postmedial line double except below submedian fold, dark brown filled in with whitish, oblique from costa to discal fold, then minutely dentate, angled outwards at vein 4 and inwards in submedian fold, then outwardly oblique to inner margin, the white before it diffused inwards in submedian fold to antemedial line; the terminal area with more or less prominent whitish streaks on each side of the veins, forming V-shaped marks below veins 8, 7, and 4; cilia more or less prominently chequered whitish and brown. Hind wing uniform dark brown; the cilia whitish at tips; the underside with the medial part of costal area and termen whitish with diffused dark postmedial band from costa to lower angle of cell, the inner edge of terminal band dentate.

Hab. S. France, Zeller, D'Emmich, and Leech Colls.; Spain, Catalonia, Murcia, Aragon; N. Italy. *Exp.* 24–28 millim.

Larva. Kirby, Butt. & Moths Eur. p. 155; Hffm. Raup. p. 74.

Gregarious. Food-plants: *Euphorbia characias*, *nicoëcusis*, and *chamæsyce*.

Genus PSEUDANTHŒCIA.

Type.
Pseudanthœcia, Smith, Trans. Am. Ent. Soc. x. p. 213 (1883) ..... *tumida*.

Proboscis fully developed; palpi obliquely porrect, the 2nd joint fringed with long hair below, the 3rd rather long; frons smooth with curved corneous plate below; eyes rather small; antennæ of male almost simple; head and thorax clothed with rough hair only and without distinct crests; abdomen with

some rough hair at base and with lateral fringes of hair but without crests. Fore wing rather narrow, the costa slightly concave, the apex somewhat produced, the termen obliquely curved, the inner margin slightly lobed near base; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2214. **Pseudanthœcia tumida.**

Lygranthœcia tumida, Grote, Bull. Brkln. Ent. Soc. iii. p. 30 (1880); Smith, Cat. Noct. N. Am. p. 286.

♂. Head and thorax pale ochreous yellow slightly tinged with rufous; abdomen orange-yellow with more or less dorsal black suffusion or irroration. Fore wing pale olive-ochreous tinged in parts with rufous and with slight black suffusion in places; subbasal line represented by traces of a pale oblique striga from costa; some specimens with traces of a diffused antemedial line; orbicular represented by a faint lunule, the reniform sometimes by some black scales at lower angle of cell; postmedial line indistinct, pale, sometimes defined by some dark scales on its inner edge at middle and towards inner margin, oblique from costa to discal fold,

Fig. 29.—*Pseudanthœcia tumida*, ♂. ½.

incurved at submedian fold, some white points usually with minute black streaks between them on costa beyond it; subterminal line represented by a diffused slightly paler band, bent outwards to apex: a terminal series of slight black points; cilia yellow at base, their tips chequered whitish and black. Hind wing with the basal half orange-yellow with some black suffusion on inner area; the terminal half deep black connected with a waved medial line more or less defined by yellow scales on its outer edge; cilia black at base, white at tips. Underside of both wings orange-yellow, the terminal area black with waved inner edge and with apical white patches with white patches before them on costa.

Hab. U.S.A., Colorado, 1 ♂ type, (*Cockerell*), 2 ♂, New Mexico, Beulah (*Cockerell*), 1 ♂. *Exp.* 24–28 millim.

Genus **HARPAGOPHANA**, nov.

Type, *H. hilaris*.

Proboscis fully developed; palpi obliquely upturned, fringed with long hair in front; frons with corneous prominence with raised edges and slight process

in centre hollowed out in front; eyes large, rounded; antennæ of male with fasciculate cilia; head and thorax clothed with rough hair only and without crests; pectus and legs clothed with long hair, the 1st joint of fore tarsi with two long claw-like spines; abdomen with some rough hair at base and lateral fringes of hair but without crests. Fore wing rather short and broad, the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2215. Harpagophana hilaris.

Metopoceras hilaris, Staud. Iris, vii. p. 275 (1894); id. Cat. Lep. pal. p. 176.

Head, thorax, and abdomen grey tinged with brown; sides of palpi and frons fuscous; tegulæ irrorated with fuscous; tarsi fuscous with slight pale rings. Fore wing grey irrorated with dark brown; subbasal line represented by slight dark spots at costa and median nervure; antemedial line represented by a series of small indistinct dark spots, double below submedian fold; orbicular small indistinctly defined by fuscous, round, confluent with antemedial

Fig. 30.—*Harpagophana hilaris*, ♂. ½.

line; reniform an indistinct narrow lunule defined by fuscous, with oblique fuscous bar from costa to it and dark spot at lower angle of cell; postmedial line very indistinct, minutely dentate, incurved below vein 4; traces of an antemedial line with diffused dark marks below costa and at middle; a terminal series of small black lunules. Hind wing grey uniformly suffused with fuscous; cilia whitish; the underside grey-white irrorated with brown, traces of a curved postmedial line.

Hab. Spain, Murcia, Guadarrama, 1 ♂, 1 ♀. *Exp.* 32 millim.

Genus METOPOCERAS.

	Type.
Metopoceras, Guen. Bull. Soc. Ent. Fr. 2nd series viii. p. xviii (1850)	*felicina*.
Phorocera, Guen. Noct. ii. p. 31 (1850)	*canteneri*.

Proboscis fully developed; palpi upturned, short, fringed with long hair in front; frons with corneous prominence with raised edges and corneous process from centre slightly hollowed out at extremity; eyes large, rounded; antennæ of male laminate; head and thorax thickly clothed with hair mixed with scales, the vertex of head slightly crested, the metathorax with thick crest; pectus and legs clothed with long hair; abdomen with some rough hair at base but without

crests. Fore wing short and broad, the termen evenly rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the terminal area paler, the subterminal line strongly angled inwards at discal and submedian folds ..... *beata.*
B. Fore wing with the terminal area concolorous, the subterminal line not angled inwards in discal and submedian folds.
a. Fore wing with distinct black subterminal line angled outwards at veins 7, 6, 4, 3 ..... *canteneri.*
b. Fore wing with the subterminal line obsolescent.
a^1. Fore wing with the ground-colour red-brown ..... *felicina.*
b^1. Fore wing ochreous white slightly tinged with rufous ... *gaucleri.*
c^1. Fore wing with the ground-colour grey.
a^2. Fore wing with fuscous suffusion before antemedial and beyond postmedial lines ..... *chalildja.*
b^2. Fore wing without fuscous suffusion before antemedial and beyond postmedial lines ..... *omar.*

*2216. ? Metopoceras beata.

Metopoceras beata, Staud. Iris, iv. p. 274, pl. 3. f. 9 (1891); id. Cat. Lep. pal. p. 175.

♀. Head and thorax dark brownish grey mixed with pale brownish grey; pectus and legs pale, the tarsi fuscous with pale rings; abdomen fuscous grey. Fore wing dark brownish grey mixed with pale brownish grey, the terminal area pale; subbasal line double filled in with grey, waved, from costa to submedian fold; antemedial line double filled in with grey, angled outward below costa, then waved; orbicular and reniform small, with dark centres and whitish annuli defined by black, the former round; postmedial line indistinct, excurved from costa to vein 4, then incurved, some pale points beyond it on costa; subterminal line only defined by the contrast between the dark and pale terminal areas, strongly angled inwards in discal and subterminal folds; a fine waved terminal line; cilia whitish with a dark line through them. Hind wing brownish grey with the terminal area broadly fuscous; a small discoidal spot and sinuous postmedial line; cilia chequered white and fuscous.

Hab. Asia Minor, Taurus, Hajin. *Exp.* 30 millim. This species is unknown to me, the figure resembles somewhat *Heterographa zelleri.*

*2217. Metopoceras canteneri.

Polia canteneri, Dup. Rev. Ent. Silb. i. 1, p. 37, pl. 3 (1833); id. Lép. Fr., Suppl. iii. p. 267, pl. 25. f. 2; Geyer, Eur. Schmett., Noct. f. 824; Rmbr. Cat. Lép. S. And. pl. 6. f. 5; Staud. Cat. Lep. pal. p. 175.
Polia insueta, Herr.-Schäff. Eur. Schmett. ii. p. 268, Noct. f. 491 (1845).

Head and thorax red-brown irrorated with a few dark scales; abdomen paler red-brown. Fore wing red-brown irrorated with a

few dark scales; antemedial line double, oblique from costa to submedian fold, where it is angled, then angled slightly inwards on vein 1; claviform absent; orbicular small, round, bright rufous defined by black; reniform bright rufous defined by black on inner side only, diffused on outer side with a black point in upper part, medial line represented by an oblique black striga from costa; postmedial line black, dentate and produced to whitish points on the veins, excurved from costa to vein 4, then incurved; subterminal line black with diffused fuscous on inner side, slightly angled outwards at veins 7, 6, 4, 3, then incurved; a fine waved black terminal line; cilia with a slight dark line through them. Hind wing red-brown, the terminal area darker; traces of a curved postmedial line; cilia ochreous with a slight dark line through them; the underside reddish grey with dark discoidal point and curved postmedial line.

Hab. S. France; Spain; Algeria. *Exp.* 34 millim. This species is unknown to me.

2218. Metopoceras felicina.

Polia felicina, Donz. Ann. Soc. Ent. Fr. 1844, p. 199, pl. 6. f. 2; Herr.-Schäff. Eur. Schmett., Noct. f. 485; Staud. Cat. Lep. pal. p. 175.

Head and thorax purplish red-brown irrorated with a few black scales; tarsi fuscous with yellowish rings; abdomen grey irrorated with black, the anal tuft rufous. Fore wing purplish red-brown irrorated with large raised grey scales, especially before medial part

Fig. 31.—*Metopoceras felicina*, ♂. ½.

of antemedial line and on medial area except towards inner margin; subbasal line very indistinct, slightly defined by grey on outer side, ending at submedian fold; antemedial line deep rufous, indistinct, slightly waved; orbicular represented by a small rufous spot in cell, the reniform by a rufous patch with oblique bar to it from costa; postmedial line very indistinct, rufous slightly defined by grey scales on outer side, slightly bent outwards below costa, excurved to vein 4, then incurved; a subterminal curved series of slight grey points. Hind wing pale cupreous red with traces of a diffused darker subterminal band; the underside greyish tinged with rufous and irrorated with brown, a discoidal spot and indistinct diffused curved postmedial and subterminal lines.

Hab. S. France: Spain, Castile, Andalusia, Leech Coll.; Morocco, Forest of Marmora (*Meade-Waldo*), 1 ♂. *Exp.* 26–30 millim.

*2219. Metopoceras gaucleri. (Plate XCIX. fig. 8.)

Metopoceros gauckleri, Püng. Iris, xvii. p. 267 (1904).

♀. Head, thorax, and abdomen ochreous white faintly tinged with rufous; antennæ brown; tarsi blackish with pale rings. Fore wing ochreous white slightly tinged with rufous; a pale red-brown subbasal line from costa to submedian fold; antemedial line pale red-brown, diffused, oblique, slightly waved; claviform absent; orbicular a small brownish spot; reniform a brown spot on the diffused reddish-brown medial line, which is excurved from costa to lower angle of cell, then slightly incurved; postmedial line slightly bent outwards below costa, then minutely waved, excurved to vein 4, then incurved, the area beyond it tinged with reddish brown with some whitish points on costa; traces of a curved subterminal minutely waved line; a terminal series of slight rufous striæ. Hind wing ochreous suffused with brown; cilia white; the underside white with small dark discoidal spot and diffused brown band just before termen from vein 3 to tornus.

Hab. Palestine, Jordan, type † ♀ in Coll. Püngeler. *Exp.* 26 millim.

2220. Metopoceras chalildja.

Metopoceras khalildja, Oberth. Ét. Ent. ix. p. 38, pl. 3. f. 1 (1884); Staud. Cat. Lep. pal. p. 175.

♂. Head and thorax white tinged with ferruginous and sparsely irrorated with black scales; the hair on pectus and legs pinkish; tarsi black ringed with white; abdomen grey suffused with fuscous; the anal tuft pale rufous. Fore wing grey tinged with rufous and sparsely irrorated with black; some black suffusion before the antemedial line, which is oblique waved; orbicular represented by a small black spot, the reniform by two spots; a diffused black medial shade; postmedial line double towards costa, bent outwards below costa, then minutely dentate, incurved below vein 4 and excurved at vein 1; some brown suffusion beyond it; subterminal line represented by a blackish mark from costa, then by a few scales; a terminal series of black striæ; cilia whitish with rufous punctiform line near base and fine line near tips. Hind wing fuscous brown with some greyish hair at base; cilia pale brownish with a brown line through them; the underside brownish grey thickly irrorated with large black scales, a slight discoidal point and curved postmedial line.

Hab. Algeria, 1 ♂. *Exp.* 32 millim.

2221. Metopoceras omar.

Cleophana omar, Oberth. Bull. Soc. Ent. Fr. 1887, p. 57; id. Ét. Ent. xii. p. 31, pl. 5. f. 15; Staud. Cat. Lep. pal. p. 176.
Metopoceras maritima, Failla, Ted. Nat. Sic. x. p. 31, pl. 1. f. 8 (1890).
Metopoceras felix, Stndf. Berl. ent. Zeit. 1893, p. 361.
Metopoceras sacra, Staud. Iris, vii. p. 281, pl. 9. f. 16 (1894).
Metopoceras caspica, Alph. Iris, viii. p. 171 (1895).

Head and thorax grey tinged with red-brown and irrorated with a few black scales; tarsi black ringed with white; abdomen brownish grey irrorated with black. Fore wing grey tinged with red-brown and irrorated with black; subbasal line represented by two slight black marks on costa; antemedial line double, the inner line red-brown, indistinct, with black point at costa, the outer black, slightly angled inwards below costa and on vein 1 and outwards in submedian fold; orbicular and reniform small, hardly traceable and very slightly defined by black, the former round, the latter somewhat constricted at middle and with black point above it on costa; postmedial line double, the inner line black, the outer hardly traceable, slightly bent outwards below costa, excurved to vein 4, then incurved; a subterminal series of slight black spots, incurved at discal fold; a fine waved black terminal line; cilia with fine black line near tips. Hind wing with the basal half brownish ochreous, the terminal half fuscous; cilia ochreous, mixed with black at tips: the underside brownish white irrorated with black, a slight discoidal lunule and curved postmedial line.

Ab. 1. *caspica*. Greyer.

Ab. 2. *felix*. Darker; fore wing dark leaden grey.

Hab. Sicily; Algeria, 1 ♂, 1 ♀, Hammam-es-Salahin (*Walsingham*), 2 ♀, Biskra (*Eaton*), 1 ♂; Syria; Palestine, Jerusalem, 1 ♂, 1 ♀; W. Turkestan, Turkomania, 1 ♂, 1 ♀. *Exp.* 26–30 millim.

Genus **AMMETOPA**, nov.

Type, *A. codeti*.

Proboscis fully developed; palpi obliquely upturned, fringed with hair in front; frons with corneous prominence with raised edges and shovel-shaped process from lower edge; eyes large, rounded; antennæ of male laminate; head and thorax clothed with hair mixed with scales and without crests; abdomen without crests. Fore wing short and broad, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 rather strong from above lower angle; 6, 7 from upper angle; anastomosing with the cell near base only.

2222. Ammetopa codeti.

Metopoceras codeti, Oberth. Ét. Ent. vi. p. 88, pl. 11. f. 10 (1881); Staud. Cat. Lep. pal. p. 176.

♂. Head and thorax white suffused with bright ferruginous; tarsi brown with pale rings; abdomen ochreous white dorsally suffused with fuscous, the anal tuft yellowish. Fore wing whitish almost wholly suffused with bright ferruginous; subbasal line represented by two slight rufous marks on costa; antemedial line faint, indistinctly double, minutely waved; orbicular a minute whitish annulus; reniform almost obsolete; a very indistinct medial line bent inwards to costa and oblique below the cell; postmedial line indistinct, bent outwards below costa, then minutely dentate,

incurved below vein 4, some pale points beyond it on costa; subterminal line represented by faint dark suffusion on its inner side, angled outwards at vein 7 and excurved at middle. Hind wing

Fig. 32.—*Ammetopa codeti*, ♂. ½.

whitish suffused with fuscous brown; cilia ochreous at base, whitish at tips; the underside whitish with diffused curved postmedial line and terminal bend.

Hab. Algeria, Biskra (*Mrs. Nicholl, Eaton*), 2 ♂. *Exp.* 26 millim.

Genus **PROTOPHANA**, nov.

Type, *P. cervina*.

Proboscis fully developed; palpi short, porrect, fringed with long hair below; frons smooth with curved corneous plate below it; eyes small, elliptical; antennæ of male ciliated; head and thorax roughly clothed with hair and scales, the pro- and metathorax with spreading crests; tibiæ fringed with long hair; abdomen with dorsal crests on basal segments. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2223. **Protophana cervina.**

Herrichia cervina, H. Edw. Ent. Am. vi. p. 114 (1890); Smith, Cat. Noct. N. Am. p. 308.

♂. Head and thorax ochreous mixed with bright rufous, the extremity of patagia and metathoracic crest with a few black scales; antennæ tinged with fuscous; tarsi fuscous ringed with ochreous; abdomen greyish suffused with red-brown. Fore wing

Fig. 33.—*Protophana cervina*, ♂. ½.

bright purplish pink slightly irrorated with black, the basal area below the cell and the postmedial area below vein 3 ochreous tinged with olive; subbasal line red defined by whitish on outer side, waved, from costa to vein 1; antemedial line red defined by whitish on inner side, rather oblique and slightly angled outwards below costa,

in submedian fold, and above inner margin; claviform a small red spot; orbicular and reniform with rufous centres and ochreous-white annuli defined by rufous, the former round, touching the antemedial line; a slight blackish medial line, oblique from costa to lower angle of cell, then incurved; postmedial line red defined by white on outer side and with some ochreous beyond it on costa, bent outwards below costa, excurved to vein 5, then incurved; subterminal line ochreous white, slightly angled outwards at vein 7, angled inwards at discal fold to the postmedial line, slightly dentate at veins 4, 3, then incurved and bent outwards to tornus; a blackish terminal line; cilia slightly mixed with white. Hind wing fuscous brown, the cilia purplish pink; the underside pale suffused with brown and purplish pink, a black discoidal lunule, curved postmedial line, fine terminal line, and slight line through the cilia.

Hab. U.S.A., California, Shasta Distr., Little Shasta (*Walsingham*), 3 ♂ type. *Exp.* 24 millim.

Genus **CRIOPHASIA**, nov.

Type, *C. albolineata*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front, the 3rd short; frons with small truncate conical prominence; eyes large, rounded; antennæ of male ciliated; head and thorax clothed chiefly with scales; tegulæ produced to a slight dorsal ridge; metathorax with slight crest; abdomen with dorsal crest at base only. Fore wing with the termen obliquely and evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

A. Fore wing with the orbicular represented by a white streak confluent with the reniform ..... *albolineata*.
B. Fore wing with the orbicular and reniform absent ..... *cauquenensis*.

2224. Criophasia albolineata.

Calophasia albolineata, Bang-Haas, ined.

♂. Head and thorax clothed with white and fuscous scales; tegulæ with black line near base and two black lines with white between them near tips; abdomen whitish mixed with grey-brown. Fore wing brownish grey overlaid with small white scales; the veins with fine black streaks; a fine black streak in base of submedian fold defined by white above and confluent with the claviform, which is defined by black and extremely narrow and elongate, extending to below angle of cell; orbicular white defined by black and with slight brown streak in middle, extremely narrow and elongate, acute at basal extremity, distally bent downwards and confluent with the small white mark defined by black representing lower part of reniform; the lines absent; some slight white points on costa towards apex; a slight fuscous

streak above vein 4 beyond angle of cell and other slight streaks in interspaces of terminal area; slight oblique white streaks below extremity of veins 6 and 4, with a slight dash below the latter further from termen; traces of a subterminal white incurved line

Fig. 34.—*Criophasia albolineata*, ♂. ½.

below vein 3; cilia fuscous and grey with whitish line through them. Hind wing white tinged with fuscous, the veins and terminal area suffused with fuscous; cilia fuscous at base, white at tips.

Hab. Tunis, 1 ♂. *Exp.* 30 millim.

2225. Criophasia cauquenensis. (Plate XCIX. fig. 9.)

Xylophasia cauquenensis, Butl. Trans. Ent. Soc. 1882, p. 116.

♀. Head and thorax grey tinged with brown and mixed with a few black scales; frons with black bars at middle and above; tegulæ with black medial line and tips; metathorax with the crest tipped with black; tarsi blackish with pale rings; abdomen grey tinged with brown, the crest at base tipped with black. Fore wing grey slightly suffused with brown and irrorated with a few dark scales, the veins of terminal half with slight dark streaks; the lines and stigmata obsolete; two slight dark streaks on medial area filled in with whitish forming a bow-shaped mark between vein 1 and submedian fold, its inner extremity indistinctly angled outwards below vein 1 and its outer curved to inner margin; a slight oblique dark striga from middle of costa; an oblique series of three black-brown marks slightly edged with whitish on outer side from termen below vein 4 to submedian fold beyond middle; cilia chequered whitish and brown. Hind wing whitish suffused with brown, leaving the lower part of cell and area beyond it paler; cilia white mixed with some brown at base and towards apex; the underside white irrorated with brown, a slight discoidal spot and postmedial series of minute streaks on the veins.

Hab. Chili, Cordilleras of Cauquenes, 1 ♀ type. *Exp.* 36 millim.

Genus **CALOPHASIA.**

	Type.
Calophasia, Steph. Ill. Brit. Ent., Haust. iii. p. 93 (1829)	*lunula.*
Cleophana, Boisd. Chen. Eur., Noct. pl. 4 (1832), non descr., nec Boisd. 1840	*casta.*

Proboscis fully developed; palpi oblique, the 2nd joint fringed with long hair in front, the 3rd short, porrect; frons smooth; eyes large, rounded;

antennæ almost simple; head and thorax clothed with hair and hair-like scales, the frons and vertex of head with ridges of hair; the tegulæ produced to a dorsal ridge, the prothorax without distinct crest, the metathorax with large crest of long scales; pectus and legs clothed with long hair; abdomen with some rough hair at base, but without crests. Fore wing with the costa nearly straight, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing without white patch on costal area before apex.
  a. Fore wing without obliquely curved white subterminal band.
    a^1. Fore wing with white annuli to orbicular and reniform.
      a^2. Fore wing with the basal and terminal areas tinged with pink ..... *adamantina*.
      b^2. Fore wing with the basal and terminal areas not tinged with pink.
        a^3. Fore wing with the ante- and postmedial lines present ..... *ocula*.
        b^3. Fore wing with the ante- and postmedial lines absent ..... *strigata*.
    b^1. Fore wing with the orbicular and reniform white defined by black ..... *lunula*.
    c^1. Fore wing with the orbicular and reniform obsolete.
      a^2. Fore wing with the postmedial line obsolete ..... *craussi*.
      b^2. Fore wing with the postmedial line present.
        a^3. Fore wing with black fascia from above claviform to termen ..... *almoravida*.
        b^3. Fore wing with black fascia above vein 2 from postmedial line to termen ..... *hamifera*.
        c^3. Fore wing without black fascia from postmedial line to termen ..... *platyptera*.
  b. Fore wing with obliquely curved white subterminal band ..... *freyeri*.
B. Fore wing with white patch on costal area before apex... *casta*.

*2226. ? Calophasia adamantina.

Calophasia adamantina, Blachier, Bull. Soc. Ent. Fr. 1905, p. 214.

Head and thorax grey mixed with white; abdomen with distinct crest on 2nd segment. Fore wing grey-white, the basal and terminal areas slightly tinged with pink; ante- and postmedial lines black edged with brown on inner side, widely separated at costa, approximated below cell, confluent at vein 1, then separating again; medial area brown; orbicular and reniform brown with white annuli and with a white patch between them; an oblique brown fascia from termen just below apex; a fine brown terminal line; cilia chequered white and brown. Hind wing black with the basal area paler.

Hab. Morocco, Rabat. *Exp.* 26 millim. This species is unknown to me.

2227. Calophasia acuta.

Noctua acuta, Frr. Neue Beitr. iii. p. 88, pl. 255. f. 3 (1839); Herr.-Schäff. Eur. Schmett. vi. p. 54, Noct. f. 542; Staud. Cat. Lep. pal. p. 180.
Calophasia producta, Led. Wien. ent. Mon. 1857, p. 97.
Polia pygmæa, Staud. Hor. Soc. Ent. Ross. vii. p. 124, pl. 1. f. 11 (1870).

♂. Head and thorax white mixed with black; frons and vertex of head with blackish bars; tegulæ with black line near base, diffused brown medial line and brown tips; tarsi banded with brown; abdomen grey tinged with brown. Fore wing bluish white irrorated with brown; the veins with slight dark streaks; subbasal line represented by a black striga from costa; antemedial line double, the inner line indistinct, angled outwards in cell, inwards in submedian fold, then excurved; the stigmata white defined by black; the claviform short, the orbicular round; an indistinct medial line, excurved to median nervure, incurved in submedian interspace, then excurved; postmedial line double, the outer line indistinct, oblique from costa to vein 6 and strongly incurved below vein 4; subterminal line represented by some diffused brown marks, especially towards costa; a short subterminal black streak above vein 4 and a streak above 2 reaching termen; a terminal series of small black lunules; cilia chequered white and brown with a blackish line through them. Hind wing almost uniformly suffused with fuscous brown; cilia white at tips; the underside white; the veins, costal and terminal areas suffused with brown.

Hab. S.E. Turkey; Asia Minor, Pontus, Bythinia, Lydia; Syria, 2 ♂. *Exp.* 30 millim.

*2228. ? Calophasia strigata.

Calophasia strigata, Smith, Trans. Am. Ent. Soc. xviii. p. 107 (1891); id. Cat. Noct. N. Am. p. 156.

♀. Head, thorax, and abdomen ash-grey mixed with some fuscous; tegulæ paler at base. Fore wing ash-grey, with a fuscous shade through the cell and on terminal area; the lines obsolete; the veins streaked with black; claviform reddish defined by black, long and narrow, from base to beyond middle of wing; orbicular and reniform with white annuli, the former narrow, clavate, oblique, the latter narrow, angled inwards on median nervure and with a faint reddish tinge beyond it; the terminal shade intersected by white streaks at veins 4, 3; a terminal series of slight dark lunules; cilia grey intersected with fuscous. Hind wing whitish at base, the veins and terminal area suffused with fuscous; the underside whitish with dark irroration.

Hab. U.S.A., Colorado (*Bruce*). *Exp.* 30 millim. This species is unknown to me.

2229. Calophasia lunula.

Phalæna lunula, Hüfn. Berl. Mag. iii. p. 394 (1767); Staud. Cat. Lep. pal. p. 213.

Noctua linariæ, Schiff. Wien. Verz. p. 73 (1776); Esp. Schmett. iv. pl. 121. ff. 4–5; Hübn. Eur. Schmett., Noct. f. 252; Dup. Lép. Fr. vii. pl. 110. f. 6; Frr. Neue Beitr. ii. pl. 171; Steph. Ill. Brit. Ent., Haust. iii. p. 94.

Head, thorax, and abdomen red-brown mixed with whitish; tegulæ with the basal half whitish with black line near base; tarsi with slight pale rings. Fore wing whitish suffused with red-brown especially on medial area and slightly irrorated with fuscous; subbasal line represented by a black point below costa; a slight black streak below base of cell to the elongate claviform, which is white defined by black; antemedial line represented by an oblique black striga from costa and double strongly excurved line from submedian fold to inner margin filled in with whitish; orbicular narrow, elongate, defined by black; reniform a small white lunule defined

Fig. 35.—*Calophasia lunula*, ♂. ½.

by black at sides; traces of a medial black shade; postmedial line indistinctly double filled in with whitish, bent outwards below costa, angled outwards at vein 6, and very strongly incurved below vein 4 to below end of cell; some white points on costa towards apex; an oblique brown shade from apex to submedian fold, with series of short black streaks on it in the interspaces; a black streak above vein 1 from reniform to termen; some white and slight black streaks in interspaces of terminal area and a slight incurved white subterminal line from vein 3 to tornus; a fine dark terminal line; cilia chequered white and brown. Hind wing white tinged with red-brown, the veins and terminal area red-brown; cilia white with slight brown line near base from apex to vein 2; the underside with minute discoidal spot, traces of postmedial line with slight dark streaks on the veins, and diffused subterminal band.

Ab. 1. Melanic; fore wing with the markings almost obsolete.

Hab. Britain (once); France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland; Spain; Balkans; Russia, Livonia, Zeller Coll.; Armenia; W. Turkestan, Sarawschan, Issyk Kul; W. Siberia, Altai; E. Siberia, Amur. *Exp.* 26–32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 252; Hffm. Raup. p. 125, pl. 33. f. 6.

Pearly white with the lines yellow; a dorsal series of transverse black spots and lateral series of black spots. Food-plants: *Linaria vulgaris, genistifolia*, and *repens*. 5–8.

2230. Calophasia craussi. (Plate XCIX. fig. 10.)

Calophasia kraussi, Rebel, Verh. zool.-bot. Ges. Wien, 1895, p. 348; Staud. Cat. Lep. pal. p. 213.

♀. Head and thorax pale ochreous brown mixed with fuscous; metathoracic crest tipped with black; tarsi black with pale rings; abdomen brownish white dorsally suffused with fuscous. Fore wing pale brownish ochreous suffused with purplish grey except on basal area, upper half of submedian interspace, and an oblique fascia from apex to upper angle of cell; the veins with fine black streaks; the submedian fold with stronger black streak with black point below it below end of cell; a slight oblique antemedial striga from costa; two slight black streaks in end of cell; a black streak beyond the cell above vein 5, met by an oblique fascia from termen below apex below the ochreous fascia from apex; a slight black streak above extremity of vein 3; cilia chequered ochreous white and black. Hind wing pale ochreous suffused with fuscous except basal and inner areas, the veins darker; cilia white intersected with black; the underside ochreous white sparsely irrorated with brown, a slight discoidal lunule and postmedial series of slight streaks on the veins.

Hab. Algeria, Hammam-es-Salahin (*Walsingham*), 1 ♀, Ourgla Oasis. *Exp.* 28 millim.

*2231. Calophasia almoravida.

Calophasia almoravida, Grasl. Ann. Soc. Ent. Fr. 1863, p. 319, pl. 8. f. 6; Staud. Cat. Lep. pal. p. 213.

♂. Head and thorax purplish grey mixed with black-brown; frons with black bar; vertex of head with two fine black lines; tegulæ with black line near base and black patch at middle of tips; patagia with black outer edge; vertex of thorax black; tarsi black with grey rings; abdomen purplish grey mixed with brown. Fore wing purplish grey irrorated with brown, the veins slightly streaked with black; a black streak in submedian fold extending through the narrow whitish claviform; antemedial line represented by a very oblique black striga from costa and an excurved grey line defined on each side by blackish from claviform to inner margin; the medial area suffused with black below the claviform, extending at inner margin to inner side of antemedial line; a black streak from above extremity of claviform to termen; orbicular and reniform absent; an oblique blackish medial shade from costa to discocellulars; postmedial line represented by two oblique striæ from costa and a double incurved line filled in with grey from vein 3 to inner margin; some slight pale points on costa towards apex; the interspaces of terminal area with black streaks, those above veins 4, 3, 2 extending to postmedial line; cilia blackish intersected with white. Hind wing whitish tinged with brown, the veins, costal and terminal areas suffused with brown; cilia

white with brown line through them: the underside white, the costal and terminal areas suffused and irrorated with fuscous, a slight dark discoidal lunule and postmedial series of short streaks on the veins.

♀. Vertex of thorax less black.

Hab. Spain, Andalusia, Castile; Portugal, Soalheira in Coll. Püngeler. *Exp.* 28 millim.

2232. Calophasia hamifera. (Plate XCIX. fig. 11.)

Calophasia hamifera, Staud. Stett. ent. Zeit. 1863, p. 268; id. Cat. Lep. pal. p. 213.

Head and thorax white mixed with black and fuscous and slightly tinged with purplish, the head tinged with fulvous; frons with black bars at middle and above; tegulæ with black line near base, diffused medial band and black tips; tarsi with black bands; abdomen grey-white tinged with brown. Fore wing grey-white slightly tinged with purplish and irrorated with black, the veins with fine dark streaks; the medial area suffused with brown from cell to inner margin, below submedian fold extending to inner side of antemedial line; the area between vein 3 and submedian fold suffused with brown to termen; a black streak below basal half of cell; antemedial line represented by a dark mark on costa and excurved line from submedian fold to inner margin; claviform elongate, white defined by black, and with short black streak from it to postmedial line; a faint oblique medial brown striga from costa; postmedial line represented by two slight very oblique striæ from costa and an incurved, indistinctly double, slightly waved line from vein 4 to inner margin; a fine streak above vein 4 from beyond cell to termen and strong streak below vein 3 from postmedial line to termen; a faint oblique shade from apex to vein 4; some white points on costa towards apex; traces of a subterminal white line angled outwards to termen at vein 7 and incurved below vein 3; subterminal black streaks above veins 7 and 6; cilia chequered fuscous and white. Hind wing white, the veins fuscous; the terminal area broadly suffused with fuscous, its inner edge diffused, more uniformly suffused in female; cilia brown at base, white at tips; the underside with the costal area irrorated with brown, a postmedial series of short dark streaks on the veins.

Hab. Spain, Castile, 1 ♂, Zeller Coll., Catalonia, La Granja (*Chapman*), 1 ♂, 3 ♀. *Exp.* 32 millim.

2233. Calophasia platyptera.

Noctua platyptera, Esp. Schmett. iv. p. 396, pl. 130. f. 5 (1788); Dup. Lép. Fr. vii. p. 337, pl. 120. f. 5; Frr. Neue Beitr. v. pl. 412. f. 2; Herr.-Schäff. Eur. Schmett., Noct. f. 158; Graslin, Ann. Soc. Ent. Fr. 1863, pl. 8. f. 7; Staud. Cat. Lep. pal. p. 213.

Noctua canterius, Vill. Linn. Ent. pl. 5. f. 11 (1789).

Noctua tenera, Hübn. Eur. Schmett., Noct. f. 254 (1827).

Cleophana olbiena, Dup. Lép. Fr., Suppl. iv. p. 230, pl. 70. f. 3 (1842), nec Geyer; Herr.-Schäff. Eur. Schmett., Noct. f. 386.
Calophasia subalbida, Staud. Cat. Lep. pal. p. 213 (1901).

Head, thorax, and abdomen grey-white tinged with brown; frons with brown bar; vertex of head dark brown; tegulæ with black line near base, two slight medial lines and semicircular dark brown patches at tips; vertex of thorax dark brown; tarsi slightly ringed with brown. Fore wing grey-white slightly tinged with brown, the veins with fine brown streaks; a fine brown streak in submedian fold to below origin of vein 2; antemedial line represented by a very oblique brown striga from costa and two fine lines from submedian fold angled outwards on vein 1, then very oblique; claviform with its extremity and lower edge defined by brown; an oblique diffused brown medial bar from costa; an oblique brown shade from apex to medial part of inner margin, where it extends to just before antemedial line, narrowing to apex; a very fine dark streak in lower part of cell; postmedial line represented by two slight very oblique streaks from costa to vein 7 and two incurved lines from vein 3 to inner margin; a black-brown streak above vein 4 from beyond lower angle of cell to termen; a series of streaks in interspaces of terminal area interrupted by traces of white lunules representing the subterminal line; cilia chequered whitish and brown and with slight line through them. Hind wing white slightly tinged with brown, the veins and terminal area browner; cilia white tinged with brown at base; the underside white, the costal area faintly tinged with brown.

Ab. 1. *subalbida*. Much whiter; fore wing with the brown markings obsolescent; hind wing nearly wholly white.—Sicily, Algeria.

Ab. 2. *olbiena*. Melanic.

Hab. Britain (once); France, Sand and Leech Colls.; Germany; Austria; Hungary; Switzerland, Frey and Leech Colls.; Sicily, Zeller Coll.; Algeria; Crete; Asia Minor, Pontus, Bithynia, Taurus; Syria, Leech Coll., Mardin. *Exp.* 28–30 millim.

Larva. Kirby, Eur. Butt. & Moths, p. 252; Hffm. Raup. p. 125.

White with lines yellow and transverse dorsal black spots and black lateral spots. Food-plants: *Linaria, Antirrhinum minus*. 6.

2234. Calophasia freyeri.

Xylina freyeri, Friv. A' Mayg. Tudos. Tarsas, Evkönv. ii. p. 273, pl. 7. f. 9 (1835); Staud. Cat. Lep. pal. p. 213.
Noctua lintea, Frr. Neue Beitr. iv. p. 141, pl. 370. f. 1 (1842).
Cleophana orontii, Herr.-Schäff. Eur. Schmett. ii. ff. 180–181 (1845).
Cleophana senescens, Ev. Bull. Mosc. 1856, ii. pl. 3. f. 1, & 1857, i. p. 94.

Head and thorax white mixed with brown; tegulæ with brown medial line and band near tips; patagia white, fuscous at base and tips; abdomen white suffused with brown, the ventral surface whiter. Fore wing grey-white suffused with pale fuscous brown, with the area from upper angle of cell to basal inner area whiter;

subbasal line represented by a slight oblique striga from costa; a short subbasal black streak in submedian fold; antemedial line represented by dark points on costa, median nervure, and vein 1; stigmata absent; postmedial line represented by a small dark spot on costa, bent outwards below costa then very oblique, defined by white on outer side and slightly angled outwards on vein 1, some white points beyond it on costa; an oblique very slightly curved white subterminal band defined on inner side by minute dentate black marks; a fine dark terminal line defined on inner side by a white line; cilia pale brown with a white line through them. Hind wing dark fuscous brown; cilia white with fine brown lines near base and middle; the underside white, the costal half irrorated with brown, the inner half suffused with brown, a slight discoidal lunule, a postmedial line excurved at discal fold, then oblique, a diffused subterminal band from discal fold to inner margin.

Hab. S. Turkey; Armenia; Asia Minor, Pontus, Taurus, 1 ♂; Syria, Leech Coll., 1 ♀, Mardin. *Exp.* 30 millim.

2235. Calophasia casta.

Noctua casta, Borkh. Scriba, Beitr. iii. p. 212, pl. 17. f. 7 (1793); Staud. Cat. Lep. pal. p. 213.

Noctua opalina, Esp. Schmett. iv. pl. 182. f. 3 (1793); Hübn. Eur. Schmett., Noct. ff. 376, 808–9; Frr. Beitr. ii. pl. 79; Dup. Lép. Fr. vii. p. 246, pl. 115. f. 3.

♂. Head, thorax, and abdomen pure white; tegulæ with slight medial line and some dark scales at middle of tips; metathoracic crest tipped with black; tibiæ and tarsi with pale fuscous bands. Fore wing with the basal half pure white; subbasal line represented by a small blackish spot on costa, the antemedial line by a small spot on costa and minute points on median nervure and vein 1; terminal half fuscous brown, the postmedial costal area white down to vein 5, the inner edge of dark area indented by a white tooth in cell not quite confluent with the small white discoidal lunule which is connected above with the white postmedial area; postmedial line with two dark marks on costa, below vein 6 a fine white line excurved to vein 4, then incurved to below end of cell, with slight dark streak before it on vein 2, then slightly defined by black on inner side and minutely waved; subterminal line very near termen formed of irregular white marks, with slight dentate black marks before them below veins 7, 5, 3, 2, and some black spots beyond them, slightly dentate at veins 4, 3, then incurved, and with oblique white streaks before it from vein 2 to tornus; the termen tinged with cupreous; cilia fuscous brown, the tips chequered with white. Hind wing white with terminal fuscous-brown band from apex to vein 2, its inner edge emitting slight streaks on the veins. Underside white; fore wing with diffused fuscous subterminal band except towards costa and inner margin; hind wing with traces of subterminal band.

♀. Head, thorax, and abdomen slightly mixed with fuscous;

fore wing with more fuscous on terminal half, its inner edge not indented in cell, the white discoidal lunule separate from costal patch, the basal inner area tinged with fuscous.

Hab. France, Sand Coll.; Germany, Zeller and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland, Frey Coll.; Spain, Catalonia; Italy; Dalmatia, Zeller Coll.; Armenia; Asia Minor, Pontus, Bithynia; W. Turkestan, Turcomania, Tarbagatai Mts., Ferghana, Issyk Kul; E. Turkestan, Ili. *Exp.* 30 millim.

Larva. Kirby, Butt. & Moths Eur. p. 252; Hffm. Raup. p. 125, pl. 33. f. 5.

Yellowish white with dorsal and subdorsal yellow lines and dark brown spots. Food-plants: *Linaria*, *Antirrhinum majus*, *Delphinium*. 7.

Genus **RHODOCHLÆNA**, nov.

Type, *R. botonga*.

Proboscis weak; palpi obliquely upturned, fringed with long hair in front, the 3rd joint porrect; frons smooth; eyes large, rounded; antennæ of female serrate; head and thorax clothed with rough hair and scales, the pro- and metathorax with spreading crests; abdomen without crests. Fore wing rather short and broad, the apex rectangular, the termen slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2236. Rhodochlæna botonga.

Dianthœcia botonga, Feld. Reis. Nov. pl. 109. f. 28 (1874).
Heliophobus perrubra, Hmpsn. Ann. S. Afr. Mus. ii. p. 279 (1902).

♀. Head and thorax chestnut-red mixed with pale pink; antennæ whitish; tarsi ringed with white; abdomen pale ochreous mixed with chestnut. Fore wing bright chestnut-red; subbasal line represented by black marks below costa and cell, with a point beyond it in cell, a short streak in submedian fold, and spot above

Fig. 36.—*Rhodochlæna botonga*, ♀. ½.

inner margin; a purplish-pink band before the antemedial line, which is black, angled outwards below costa, then oblique, slightly sinuous; claviform absent; orbicular and reniform narrow, chestnut with white annuli defined by black, the former extending to below the cell and connected with the latter by a fascia on median nervure; postmedial line black with a purplish-pink band on its

outer side with slight brown line on it, bent outwards below costa, obliquely excurved to vein 4, then bent inwards to lower edge of reniform and erect to inner margin, some white points beyond it on costa; subterminal line white defined by small somewhat dentate black marks on inner side, angled outwards at vein 7, incurved at discal fold and below vein 3; a series of small black lunules just before termen with chestnut patches on the termen and cilia intersected by pinkish dentate marks. Hind wing red-brown with darker terminal line; the underside whitish irrorated with red-brown, the veins and terminal area suffused with red-brown, a brown discoidal spot, curved postmedial line, and traces of subterminal band shewing slightly on upperside.

Hab. Cape Colony, Transkei (*Miss F. Barrett*), 1 ♀ type *perrubra*. *Exp.* 34 millim.

Genus **LEUCOCHLÆNA**, nov.

Type, *L. hispida*.

Proboscis minute; palpi porrect to just beyond frontal tuft and fringed with long hair below; frons smooth; eyes large, rounded; antennæ of male typically bipectinate with long branches to apex, of female ciliated; head and thorax clothed with hair and hair-like scales, the pro- and metathorax with spreading crests; pectus and legs clothed with long hair; abdomen with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the apex rounded, the termen obliquely curved and somewhat crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of female serrate.

2237. Leucochlæna fallax.

Heliophobus fallax, Staud. Berl. ent. Zeit. 1870, p. 116; Mill. Icones, iii. p. 416, pl. 151. ff. 12–13; Staud. Cat. Lep. pal. p. 177.

Head and thorax ochreous mixed with fuscous; palpi blackish at sides; abdomen brownish ochreous. Fore wing ochreous suffused

Fig. 37.—*Leucochlæna fallax*, ♀. ½.

with reddish brown, leaving the costa and inner margin more ochreous; the veins ochreous; a slight diffused black streak below base of cell; the subbasal line represented by two black striæ from costa; antemedial line double filled in with ochreous, slightly angled outwards below costa and excurved in submedian interspace; claviform defined by ochreous and black at extremity; orbicular and reniform narrow with brownish centres and ochreous annuli

defined by black, the former very oblique, open above and below, where it is confluent with the latter, which is strongly angled inwards on median nervure and open above and below; postmedial line double filled in with ochreous, strongly bent outwards below costa, then very oblique and slightly sinuous; subterminal line broad, ochreous, defined on inner side by slight dentate black marks very slightly excurved below costa and at middle, then oblique; a fine slightly waved black terminal line; cilia brownish ochreous with a brown line through them. Hind wing ochreous suffused with brown; an indistinct curved postmedial line; the termen narrowly ochreous; cilia ochreous white; the underside pale ochreous irrorated with brown, a slight discoidal spot and curved postmedial line.

Hab. S. Russia, Sarepta, Zeller Coll. *Exp.*, ♂ 26, ♀ 32 millim.

Larva. Hffm. Raup. p. 92.

Reddish grey irrorated with very small dark points, sides lighter; head brownish yellow. Food-plants: Grasses in the spring.

Sect. II. Antennæ of female ciliated.

A. Fore wing with the veins streaked with whitish.
  a. Fore wing with the subterminal line evenly curved ..... *hispida*.
  b. Fore wing with the subterminal line waved..... *hirsuta*.
B. Fore wing with the veins not streaked with whitish.
  a. Fore wing without dentate black marks on subterminal line. *orana*.
  b. Fore wing with dentate black marks on subterminal line.
    a'. Fore wing with the reniform lunulate, filled in with black ..... *hipparis*.
    b'. Fore wing with the reniform narrow, angled inwards on median nervure, white with slight brownish centre ..... *leucocera*.

2238. Leucochlæna hispida.

Noctua hispida, Geyer, Eur. Schmett., Noct. ff. 784–6 (1827); Boisd. Icones, pl. 72. ff. 6–7; Mill. Icones, i. pl. 22. ff. 1–3; Staud. Cat. Lep. pal. p. 177.
Episema pilosa, Boisd. Ind. Meth. p. 139 (1840).
Noctua hirta, Dup. Lép. Fr. vi. p. 275, pl. 90. f. 3 (nec Hübn.).

Head and thorax brownish ochreous mixed with greyish and fuscous; palpi blackish at sides; frons dark above with whitish line between antennæ; tegulæ with dark medial band and whitish tips; patagia edged with blackish; tarsi black ringed with white; abdomen brownish ochreous. Fore wing brownish ochreous, the medial area suffused with red-brown except towards costa and inner margin; the veins whitish; subbasal line double, black filled in with white, waved, from costa to submedian fold; black spots above and below vein 1 before the antemedial line, which is double, black filled in with white, oblique, angled outwards below costa and above inner margin; claviform moderate, defined by black; orbicular and reniform defined by black, the former orange-fulvous with whitish annulus, round, the latter fawn-coloured, elliptical; a waved black medial line except at inner margin, which is whitish from near base to tornus; postmedial line double filled in with whitish, strongly

bent outwards below costa, then dentate, below vein 4 bent inwards to below reniform, obsolete towards inner margin, some white points beyond it on costa; subterminal line white defined on inner side by dentate black marks and on outer by rufous, nearly evenly curved from costa to submedian fold, where it is incurved; a terminal series

Fig. 38.—*Leucochlæna hispida*, ♂. ½.

of small black lunules defined by whitish on inner side; cilia ochreous brown and fuscous at base, pale at tips. Hind wing brownish white with sinuous postmedial line and diffused brown subterminal band, in female more suffused with brown; a dark terminal line; cilia whitish; the underside white slightly irrorated with brown, a dark discoidal spot and sinuous postmedial line.

Hab. Britain, Leech Coll.; S. France, Zeller and Sand Colls.; Spain, Leech Coll. Catalonia, Andalusia; Sicily; Algeria; Palestine. *Exp.* 28–36 millim.

Larva. Meyr. Brit. Lep. p. 59; Barrett, Lep. Brit. iv. p. 269, pl. 165. f. 3.

Yellow-green or brownish; dorsal and subdorsal lines pale, dark-edged; spiracular line broad, yellowish white; tubercles black. Food-plants: Grasses. 10–4.

*2239. Leucochlæna hirsuta.

Heliophobus hirsutus, Staud. Iris, iv. p. 277 (1891); id. Cat. Lep. pal. p. 177.

♂. Head and thorax brownish grey; palpi, pectus, and abdomen yellowish. Fore wing dirty grey-brown, the lines and veins dark defined by whitish; antemedial line excurved below the cell; orbicular elongate oblique, with pale centre defined by fuscous and whitish annulus defined by black; reniform with dark centre and pale annulus defined by black on inner side only; postmedial line strongly bent outwards below costa, excurved to vein 4, then incurved; a pale waved subterminal line with three dentate black marks before it on inner half; a fine black terminal line; cilia fuscous with fine pale lines at base and middle. Hind wing dirty white slightly tinged with fuscous towards termen; the underside with some dark irroration and a discoidal point.

Hab. Asia Minor, Marasch. *Exp.* 28 millim. This species is unknown to me.

*2240. Leucochlæna orana.

Episema orana, Lucas, Explor. Algérie, p. 384, pl. 3. f. 7 (1849); Staud. Cat. Lep. pal. p. 177.

♂. Head and thorax clothed with long grey hair; antennæ rufous; abdomen ochreous tinged with fuscous. Fore wing whitish tinged with brown, the medial area darker except towards costa; antemedial line indistinct, waved; claviform moderate defined by blackish; orbicular and reniform small, white defined by blackish and with slight brown centres, the former rather elongate elliptical, the latter narrow; postmedial line bent outwards below costa, then minutely dentate, oblique below vein 4; an oblique diffused whitish fascia from apex to postmedial line, a whitish subterminal line from the fascia to above inner margin; a terminal series of small whitish lunules slightly defined by black on inner side. Hind wing whitish tinged with brown; a curved postmedial line, indistinct diffused subterminal band, and terminal series of dark striæ; the underside whitish tinged with rufous, a dark discoidal point and curved postmedial band.

Hab. Algeria. *Exp.* 32 millim. This species is unknown to me.

2241. Leucochlæna hipparis.

Heliophobus hipparis, Druce, Biol. Centr.-Am., Het. i. p. 272, pl. xxvi. f. 19 (1887).

Head, thorax, and abdomen ochreous brown. Fore wing ochreous brown slightly irrorated with fuscous; subbasal line represented by slight double striæ from costa and cell; antemedial line indistinctly double filled in with ochreous, oblique, angled outwards below costa and above inner margin and excurved in submedian interspace; claviform small, slightly defined by black; orbicular very small, oblique elliptical, with rufous centre and ochreous annulus defined by black; reniform small with black centre and ochreous annulus defined by black; traces of a waved medial line; postmedial line double at costa, then single, defined by ochreous on outer side, strongly bent outwards below costa, then somewhat dentate, angled inwards in discal fold and incurved below vein 4, some ochreous points beyond it on costa; subterminal line represented by a diffused blackish irregularly dentate line on its inner edge, slightly angled outwards below costa and inwards in discal fold, more strongly in submedian fold; a terminal series of slight blackish lunules. Hind wing ochreous tinged with brown; a slight brown terminal line; the underside paler irrorated with brown, a discoidal lunule and indistinct curved postmedial line showing through to upperside.

Hab. Mexico, Jalapa (*Hoege*), 1 ♂, Mexico City (*Hoege, Godman*), 2 ♂, 1 ♀ type, Milpas (*Forrer*), 1 ♂, Godman-Salvin Coll. *Exp.* 26–32 millim.

2242. Leucochlæna leucocera. (Plate XCIX. fig. 12.)

Bombycia leucocera, Hmpsn. Moths Ind. ii. p. 207 (1894).

♀. Head and thorax clothed with grey-white and reddish-brown hair; antennæ white; abdomen ochreous brown mixed with whitish. Fore wing whitish tinged with brown and irrorated slightly with black, the costal area whiter, the veins slightly streaked with blackish; subbasal line represented by blackish striæ from costa and cell; antemedial line blackish, interrupted below costa, then oblique, sinuous; claviform small, narrow, yellowish white defined by black, the yellowish interrupting the antemedial line; orbicular very small, white defined by black except above and with slight rufous mark in centre, oblique elliptical; reniform white defined by black and with brown centre, narrow and acutely angled inwards on median nervure; postmedial line black-brown defined by whitish on outer side, strongly bent outwards below costa, then minutely waved, excurved to vein 4, then oblique; subterminal line white defined on inner side by small rather wedge-shaped black spots between veins 7 and 2 indenting the line which is very slightly angled outwards at vein 7; a fine black terminal line; cilia whitish mixed with rufous and with three very slight lines through them. Hind wing pale suffused with ochreous brown and slightly tinged with fuscous except on costal area; cilia yellowish white; the underside whitish irrorated with brown and the veins streaked with brown, a small discoidal lunule and sinuous postmedial line. Palpi with the 3rd joint rather long.

Hab. Kashmir, Scinde Valley (*Leech*), 1 ♀ type. *Exp.* 46 millim.

Sect. III. Antennæ of male with short branches.

2243. Leucochlæna leucogonia.

Heliophobus leucogonia, Hmpsn. Ann. S. Afr. Mus. iii. p. 426 (1905).

♂. Head and thorax bright rufous mixed with some ochreous: abdomen ochreous tinged with rufous. Fore wing ochreous suffused with rufous, the cell, costal area, and veins rather darker, the submedian interspace yellower; a short white fascia in base of cell,

Fig. 39.—*Leucochlæna leucogonia*, ♂. ½.

bent upwards at extremity; subbasal and antemedial lines, claviform and obicular absent; an elongate white spot defined by brown

on extremity of median nervure sometimes conjoined to the reniform, which is narrow, white defined by brown, constricted at middle; a medial brown line from origin of vein 2 to inner margin, excurved in submedian interspace; postmedial line absent; subterminal line brown, slightly excurved below costa and incurved below vein 2; a brown terminal line. Hind wing white slightly tinged with rufous; a small discoidal lunule, indistinct curved postmedial line, and brown terminal line; the underside with the costal area suffused with rufous.

Hab. Mashonaland (*Dobbie*), 1 ♂ type; Natal, Kratzkloof (*Field*), 1 ♂. *Exp.* 32–36 millim.

Genus **ULOCHLÆNA**.

	Type.
Ulochlæna, Led. Noct. Eur. p. 96 (1857)	*hirta*.

Proboscis absent; palpi porrect to just beyond frontal tuft, fringed with long hair below; frons smooth; eyes large, rounded; antennæ of male typically bipectinate with long branches to apex, of female ciliated; head and thorax clothed with hair only and without crests; tibiæ fringed with long hair; abdomen clothed with long hair and with lateral fringes of hair, without crests. Fore wing rather narrow, the costa somewhat concave, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only. Female typically with the wings aborted and very much reduced.

Sect. I. Antennæ of male bipectinate with long branches to apex; wings of female aborted and minute.

A. Fore wing with the reniform angled inwards on median nervure and emitting strong teeth on veins 4, 3, 2 ..... *superba*.
B. Fore wing with the reniform not angled inwards on median nervure or emitting teeth on veins 4, 3, 2 ..... *hirta*.

*2244. Ulochlæna superba.

Ulochlæna superba, Alph. Hor. Soc. Ent. Ross. xxvi. p. 447 (1892); id. Rom. Mém. ix. p. 24, pl. 1. f. 7; Staud. Cat. Lep. pal. p. 178.

♂. Head, thorax, and abdomen brown tinged with ochreous. Fore wing reddish brown; an ochreous fascia in base of cell and below costa to middle; an ochreous streak defined by black below the cell to middle confluent with the claviform; the basal inner area tinged with ochreous; an ochreous streak on median nervure; subbasal and antemedial lines absent; orbicular ochreous defined by black, elongate elliptical; reniform ochreous defined by black, rather narrow, angled inwards on median nervure and emitting three strong teeth on veins 4, 3, 2; a quadrate ochreous postmedial patch below costa confluent with a similar patch at apex, some ochreous points on costa towards apex; postmedial line obsolete towards costa, ochreous and oblique from vein 4 to inner margin; a subterminal series of ochreous striæ from apical patch to inner margin; a terminal series of black striæ; cilia ochreous at

base, the tips chequered ochreous and brown. Hind wing uniform brown, the cilia ochreous.

Hab. Tibet, Nan-Schan Mts. *Exp.* 36 millim. This species is unknown to me; in appearance it suggests an Agrotid of the genus *Episilia*.

2245. Ulochlæna hirta.

Noctua hirta, Hübn. Eur. Schmett., Noct. f. 591 (1827); Boisd. Icones, pl. 74. f. 1; Dup. Lep. Fr., Suppl. iii. p. 176. pl. 16. f. 4; Fr. Neue Beitr. vi. pl. 515. f. 4; Mill. Icones, i. p. 276, pl. 31. ff. 6-9; Staud. Cat. Lep. pal. p. 178.

♂. Head, thorax, and abdomen reddish brown mixed with grey: pectus, legs, and ventral surface of abdomen mostly grey. Fore wing reddish brown slightly suffused with fuscous, the veins, costal and terminal areas greyish suffused with ochreous brown; subbasal line represented by a black point below costa; antemedial line double, black filled in with whitish, angled outwards and obsolescent below costa, then slightly incurved, bent inwards to inner margin; claviform whitish defined by black, elongate and

Fig. 40.—*Ulochlæna hirta*. ♂. ½.

rather acute at extremity; orbicular and reniform small with brown centres and whitish annuli defined by black, the former round, the latter rather quadrate and only defined at sides; faint traces of an oblique waved line from lower angle of cell to inner margin; postmedial line black defined by whitish on outer side, oblique from costa to vein 6, then inwardly oblique, the inner margin beyond it whitish; subterminal line whitish defined on inner side by dentate blackish marks, slightly waved and somewhat angled outwards at vein 7 and excurved at middle; a terminal series of small brown lunules; cilia brownish ochreous with a dark line near base. Hind wing ochreous brown with indistinct sinuous postmedial line; a fine brown terminal line; cilia whitish with brown line near base; the underside whitish tinged with brown especially on costal area, a brown discoidal spot and curved postmedial line.

♀. Ochreous brown suffused with fuscous.

Hab. S. France, Frey and Leech Colls.; Sicily: Algeria; Dalmatia; Rumelia; Bulgaria; S. Russia, Zeller, Frey, and Leech Colls., Caucasus, Leech Coll.; Armenia; Asia Minor, Pontus, Leech Coll.; N. Syria. *Exp.*, ♂, 26-38 millim.

Larva. Kirby, Eur. Butt. & Moths, p. 217; Hffm. Raup. p. 92, pl. 26. f. 4. Pale grey with yellow stigmatal line. Food-plants: Grasses, feeding at night and hiding during the day in a silken case underground. 4.

Sect. II. Antennæ of male bipectinate with long branches to apex; wings of female partly aborted, the costa arched and fringed with hair, the apex rounded; cilia of both wings very long.

*2246. Ulochlæna scillæ.

Heliophobus scillæ, Chrét. Le Nat. 1888, p. 92; id. Le Nat. 1892, p. 7; Staud. Cat. Lep. pal. p. 177.

♂. Head and thorax black with a few grey hairs; palpi at tips and antennæ ochreous; metathorax with a pair of white points; pectus with ochreous-white hair; tibiæ with some purplish hair; tarsi fuscous with ochreous rings; abdomen ochreous tinged with fuscous at extremity. Fore wing purplish fuscous, the costal area and inner margin ochreous white on medial area with black streak above latter, the postmedial area purplish red; the median nervure and veins rising from it and vein 1 streaked with ochreous white on medial area; subbasal line black, from costa to submedian fold; antemedial line double, blackish, strongly curved; claviform fuscous defined by black, large; orbicular purplish defined by black, round; reniform ochreous defined by black and with whitish line on discocellulars, angled inwards on median nervure and almost touching the orbicular, the cell before and between the stigmata and the area before postmedial line fuscous brown; postmedial line double, slightly bent outwards below costa, oblique to vein 6, then inwardly oblique and minutely waved, slightly bent outwards to inner margin; subterminal line dark, angled outwards at vein 7, then curved and with dark streaks in the interspaces from it to the terminal series of black lunules; cilia brownish with a darker line through them. Hind wing ochreous suffused with brown, darker on terminal area; the extremity of median nervure, discocellulars, and veins just beyond lower angle of cell whitish; a curved dark postmedial line; cilia brownish, the underside ochreous white, the veins streaked with brown towards termen, a dark terminal line; cilia tinged with purplish pink.

Fig. 41.—*Ulochlæna scillæ.* ½.

♀. Antennæ dark; abdomen grey-brown. Fore wing redder, with the costal area and inner margin red-brown on medial area, the veins without whitish streaks; reniform red-brown; subterminal line pale, with a series of whitish points without streaks from it to the terminal lunules; terminal area red-brown. Hind

wing dark reddish brown, pale at base; cilia ochreous at base; the underside ochreous suffused with red-brown, the inner area darker.

Hab. Algeria, Bone, in Coll. Oberthür. *Exp.*, ♂ 42, ♀ 36 millim.

Subsp. 1. *dotini*, Oberth. Ét. Ent. xiii. p. 30, pl. 6. f. 38 (1892).

♂. Fore wing much paler; ochreous tinged with brown and slightly suffused with fuscous; the subbasal line reduced to points below costa and cell; the antemedial line more oblique from costa to submedian fold; the claviform not so dark; the orbicular and reniform ochreous defined by black and confluent on median nervure, the whitish on inner margin without black streak above it; the postmedial area brownish ochreous. Hind wing ochreous white, the terminal area suffused with brown.

Hab. Tunis, Letref, type † ♂ in Coll. Oberthür. *Exp.* 40 millim.

Sect. III. Antennæ of male serrate; female with the wings fully developed.

2247. Ulochlæna fumea.

Heliophobus fumea, Hmpsn. Ann. S. Afr. Mus. ii. p. 280 (1902).

Head, thorax, and abdomen brownish grey mixed with fuscous. Fore wing brownish grey irrorated with fuscous; antemedial line black, somewhat diffused, curved, slightly waved; claviform and orbicular absent; reniform a small black lunule: postmedial line

Fig. 42.—*Ulochlæna fumea*, ♂. ½.

black, obsolescent towards costa, bent outwards below costa to towards apex, then minutely dentate, obliquely curved to vein 4, then incurved and oblique to inner margin; a black terminal line. Hind wing grey-white slightly tinged with brown; the underside with slight discoidal spot.

Hab. Cape Colony, Transkei (*Miss F. Barrett*), 1 ♂, 1 ♀ type. *Exp.* 26 millim.

Genus CHARIDEA.

	Type.
Charidea, Guen. Noct. ii. p. 60 (1852)	*elegantissima*.

Proboscis fully developed; palpi obliquely porrect, the 2nd joint fringed with long hair below, the 3rd moderate; front smooth, with transverse ridge of scales; eyes large, reniform; antennæ of male bipectinate with moderate branches; head and thorax clothed chiefly with scales, vertex of head with transverse ridge of scales, the pro- and metathorax with spreading crests; tibiæ fringed with hair on outer side; abdomen with dorsal crest at base and lateral fringes of hair. Fore wing with the apex slightly produced, the

termen obliquely curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the angle; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2248. Charidea elegantissima.

Charidea elegantissima, Guen. Noct. ii. p. 61, pl. 8. f. 12 (1852).

♂. Head and thorax clothed with grey, red-brown, and dark-brown scales; frons and vertex of head with black bars; tegulæ with black medial line and dark red-brown tips; patagia with whitish band in front; tarsi blackish ringed with white; abdomen pale purplish brown with some whitish hair at base and slight white segmental lines, the ventral surface dark brown mixed with rufous and whitish, and with ventral series of small white spots. Fore wing violaceous-grey tinged with pink and irrorated with brown, the veins with slight dark streaks; subbasal line represented by black bars from costa and cell defined by white on outer side; olive-green patches irrorated with and faintly defined by black on basal area below the cell and vein 1, defined by white above and on outer side; a small black spot in cell before the antemedial line, which is fine, double, brownish, angled outwards below costa, then very outwardly oblique and slightly downcurved to just above middle of inner margin, where it joins the similar postmedial line which is strongly bent outwards below costa, curved to vein 4, then very oblique to above inner margin; the medial area with large V-shaped olive-green patch, slightly irrorated and edged with black and defined by white lines, its arms arising from subcostal nervure and vein 6 and its apex above middle of inner margin; orbicular and reniform with pinkish centres defined by white, the

Fig. 43.—*Charidea elegantissima*, ♂. ½.

former a narrow oblique bar, the latter rather V-shaped, emitting a fascia from its lower extremity below the cell to the orbicular, or bisecting the inner arm of V-shaped mark and extending to antemedial line, an olive-green spot edged with black between them in cell; some white points on costa beyond the postmedial line; subterminal line represented by a series of rather dentate black spots in the interspaces with white lunules on them; a fine black terminal line with white line on its inner side; cilia brown with fine white line at base and intersected with white. Hind wing

white, the veins, inner and terminal areas suffused with brown; a discoidal lunule and postmedial line excurved at discal fold; a fine dark terminal line slightly defined by white on inner side; cilia white with a brown line through them; the underside with the costal and terminal areas irrorated with brown, the discoidal lunule and postmedial line strong, a diffused subterminal band.

Hab. Portuguese E. Africa; Cape Colony, Grahamstown, 1 ♂, Capetown, 1 ♂. *Exp.* 36–40 millim.

Genus **ANDESIA**, nov.

Type, *A. œnistis*.

Proboscis fully developed; palpi upturned, reaching vertex of head, the 2nd joint fringed with long hair in front, the 3rd porrect; frons smooth; eyes large, rounded; antennæ of male almost simple, somewhat laminate; head and thorax clothed chiefly with scales, the frons and vertex of head with tufts of hair, the pro- and metathorax with spreading crests; pectus and tibiæ clothed with long hair; abdomen with dorsal crest at base only and lateral fringes of hair. Fore wing short, the costa very slightly concave, the termen obliquely curved, the inner margin slightly lobed near base; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2249. Andesia œnistis, n. sp.

Head and thorax pale rufous mixed with black; palpi blackish at sides; frons with lateral black bars; tegulæ with black line near tips; tarsi ringed with black; abdomen ochreous brown. Fore wing pale ochreous irrorated with fuscous and slightly tinged with purplish, the medial and terminal areas suffused with blackish; a diffused black streak below base of cell, a slight subbasal streak in cell and some scales on vein 1; subbasal line represented by a black striga from costa; antemedial line double, strongly excurved; orbicular small, round, with black centre and ochreous annulus defined by black; reniform a small ochreous lunule obscurely

Fig. 44.—*Andesia œnistis*, ♂. ½.

defined by black; an indistinct diffused medial line excurved round orbicular, then incurved; postmedial line double, oblique from costa to vein 6, excurved to vein 4, then strongly incurved, some slight pale and dark points beyond it on costa; subterminal line formed of pale ochreous striæ except towards costa, defined by slight somewhat dentate black marks on inner side, and with

black streaks interrupted by ochreous points beyond it in the interspaces, somewhat dentate at veins 4, 3; cilia ochreous intersected with black. Hind wing olive-brown, the terminal area slightly darker; cilia pale ochreous, brown at base; the underside greyish irrorated with fuscous, the terminal area suffused with fuscous.

Hab. ARGENTINA, Mendoza, Puenta del Inca, 2 ♂, 1 ♀ type. *Exp.* 26 millim.

Genus **LEPIPOLYS.**

	Type.
Lepipolys, Guen. Noct. ii. p. 173 (1852)	*perscripta.*

Proboscis fully developed; palpi obliquely upturned, fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of male minutely serrate and fasciculate or ciliated; head and thorax clothed entirely with large scales, the tegulæ with slight dorsal ridge, the metathorax with small crest; fore tibiæ very short and broad with long curved claw on inner side, short claw on outer and corneous plate between them; abdomen with some rough hair at base but without crests. Fore wing with the apex rectangular, the termen obliquely curved; veins 3, 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

SECT. I. Antennæ of male minutely serrate and fasciculate.

2250. **Lepipolys behrensi.**

Oncocnemis behrensi, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 65 (1874); Smith, Cat. Noct. N. Am. p. 160.

♂. Head and thorax pale grey-brown irrorated with some large black scales; tarsi banded with black; abdomen brownish grey irrorated with fuscous. Fore wing pale grey-brown sparsely irrorated with black; subbasal line represented by double black striæ from costa and cell; antemedial line double, minutely waved; claviform faintly defined by a few black scales; orbicular and

Fig. 45.—*Lepipolys behrensi*, ♂. ½.

reniform defined by black and with some fuscous in centres, the former round; traces of a waved medial line; postmedial line indistinctly double, strongly bent outwards below costa, then minutely dentate, excurved to vein 4, then strongly incurved, some pale points beyond it on costa; subterminal line ochreous white

with slight black streaks before it in the interspaces, minutely waved, slightly angled outwards at vein 7 and incurved below vein 3; a terminal series of slight black lunules; cilia pale with a fuscous line through them. Hind wing white tinged with brown, the veins and terminal area suffused with fuscous; a slight discoidal point; cilia white with a dark line through them; the underside white irrorated with fuscous, especially on costal and terminal areas, a discoidal point and postmedial series of minute streaks on the veins.

Hab. U.S.A., California, Sanzalito, 3 ♂ type. *Exp.* 34 millim.

Sect. II. Antennæ of male ciliated.

2251. Lepipolys perscripta.

Lepipolys perscripta, Guen. Noct. ii. p. 174, pl. vii. f. 10 (1852); Smith, Cat. Noct. N. Am. p. 259.

Head and thorax grey tinged with brown and irrorated with a few large black scales; tarsi banded with black; abdomen pale reddish brown. Fore wing grey tinged with brown and sparsely irrorated with large black scales, especially on the veins; subbasal line black, slightly waved, from costa to submedian fold; antemedial line indistinctly double, black, waved, slightly angled outwards below costa and inwards in submedian fold, somewhat oblique, with some large black scales before it; claviform large defined by black at extremity; orbicular and reniform large with slight whitish annuli defined by black, the former round; medial line represented by a slight dark mark on costa; postmedial line

Fig. 46.—*Lepipolys perscripta*, ♂. ½.

double, the outer line very indistinct, bent outwards below costa, then minutely dentate below vein 4, incurved to below reniform, some white points beyond it on costa; subterminal line formed of small dentate white marks angled outwards at veins 7, 6, and excurved at middle; a waved black terminal line; cilia grey-brown with two slight dark lines through them. Hind wing whitish tinged with brown; the veins brown; the terminal area suffused with brown; cilia white with a pale brown line near base; the underside with the costal and terminal areas irrorated with brown, a small discoidal spot.

Hab. U.S.A., 1 ♂, 1 ♀, Massachusetts, Florida, St. John's

Bluff (*Doubleday*), 7 ♂ type, Texas, Colorado, California. *Exp.* 32-40 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. v. p. 292 (1903).

Head sordid whitish with many small black spots. A dorsal band of broad elliptical white spots, two on each segment; a broad white stigmatal band centred by the spiracles. Body shaded with olivaceous blackish, tubercles large, blackish brown, the subventral ones white ringed; cervical shield and anal plate white with black dots; spiracles black; feet pale. Food-plant, *Linaria canadensis*.—H. G. D.

Genus **ONCOCNEMIS**.

	Type.
Oncocnemis, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 368...	*strioligera.*
Copihadena, Morr. Can. Ent. vii. p. 91 (1875).....	*atricollaris.*
Metahadena, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 431...	*atrifasciata.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front, the 3rd porrect; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed chiefly with scales, the pro- and metathorax with spreading crests; fore tibia short with curved claw at extremity on inner side and sometimes a minute claw on outer side; abdomen with some rough hair at base but without crests. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Hind wing yellow.
- *a.* Fore wing with the orbicular elongate elliptical and connected with the reniform by a black streak ..... *mirificalis.*
- *b.* Fore wing with the orbicular rounded, not connected with the reniform by a black streak.
  - a^1. Fore wing with the ante- and postmedial lines double filled in with white ..... *dayi.*
  - b^1. Fore wing with the ante- and postmedial lines single.
    - a^2. Fore wing with the antemedial line distinct, dentate.
      - a^3. Fore wing with the ground-colour rufous ..... *hayesi.*
      - b^3. Fore wing grey tinged with ochreous ..... *regina.*
    - b^2. Fore wing with the antemedial line hardly traceable.
      - a^3. Fore wing with the basal half brown suffused with grey ..... *cuta.*
      - b^3. Fore wing blackish with a silky gloss to postmedial line ..... *corusca.*

B. Hind wing not yellow.
- *a.* Hind wing with the basal area dark, a whitish medial band and black terminal band.
  - a^1. Hind wing with the medial whitish band not reaching inner margin ..... *exemplaris.*
  - b^1. Hind wing with the medial whitish band reaching inner margin.
    - a^2. Fore wing with the reniform filled in with white ... *albifusciata.*
    - b^2. Fore wing with the reniform yellow defined by black and with fuscous centre ..... *melantho.*
    - c^2. Fore wing with slight pale annulus to reniform.
      - a^3. Hind wing with the medial whitish band broad... *pudorata.*
      - b^3. Hind wing with the medial whitish band narrow. *tenuifascia.*

b. Hind wing with the basal area concolorous with medial area.
*a*¹. Fore wing without black streaks in interspaces of terminal area.
*a*². Hind wing with sharply defined black terminal band.
*a*³. Fore wing with the terminal area darker than the postmedial area.
*a*⁴. Fore wing with broad whitish postmedial band.
*a*⁵. Fore wing with the subterminal line almost obsolete ..... *exacta*.
*b*⁵. Fore wing with the subterminal line whitish. *halteata*.
*b*⁴. Fore wing without white postmedial band ..... *terminalis*.
*b*³. Fore wing with the terminal area not darker than the postmedial area.
*a*⁴. Fore wing strongly irrorated with white scales. *iricolor*.
*b*⁴. Fore wing not irrorated with white scales.
*a*⁵. Fore wing with the claviform whitish defined by black, extending to postmedial line ..... *levis*.
*b*⁵. Fore wing with the claviform absent ..... *simplex*.
*b*². Hind wing with the terminal band diffused on inner side.
*a*³. Fore wing with more or less prominent dentate dark marks before the subterminal line.
*a*⁴. Fore wing with the ante- and postmedial lines more or less distinctly defined.
*a*⁵. Fore wing with the ante- and postmedial lines distinctly double.
*a*⁶. Fore wing with the basal and postmedial areas suffused with blue-grey.
*a*⁷. Fore wing with the subterminal line angled outwards to termen at veins 4, 3... *saundersiana*.
*b*⁷. Fore wing with the subterminal line not angled outwards to termen at veins 4, 3.
*a*⁸. Fore wing with the claviform connected with the postmedial line by a black streak ..... *pernotata*.
*b*⁸. Fore wing with the claviform minute, not connected with the postmedial line... *campicola*.
*b*⁶. Fore wing without blue-grey suffusion on basal and postmedial areas.
*a*⁷. Fore wing with the postmedial area paler than the ground-colour ..... *polingi*.
*b*⁷. Fore wing with the postmedial area concolorous.
*a*⁸. Fore wing with strong black medial shade ..... *fusiata*.
*b*⁸. Fore wing without black medial shade ... *confusa*.
*b*⁵. Fore wing with the ante- and postmedial lines single.
*a*⁶. Fore wing with the antemedial line evenly curved, the postmedial line incurved from costa to inner margin..... *meadiana*.
*b*⁶. Fore wing with the antemedial line more or less irregular, the postmedial line bent outwards below costa.
*a*⁷. Fore wing olive-fuscous..... *nigricula*.
*b*⁷. Fore wing whitish tinged with brown.
*a*⁸. Head and tegulæ with blackish patches... *occata*.
*b*⁸. Head and tegulæ without blackish patches. *strioligera*.

c^7. Fore wing with the ground-colour rufous or brown.
a^8. Fore wing with whitish annuli to orbicular and reniform.
a^9. Fore wing with the orbicular and reniform very small ..... *viriditincta.*
b^9. Fore wing with the orbicular and reniform well developed.
a^{10}. Fore wing with the costal area to median nervure pale ..... *laticosta.*
b^{10}. Fore wing with the costal area concolorous.
a^{11}. Fore wing with the ground-colour rufous ..... *augusta.*
b^{11}. Fore wing grey thickly irrorated with black-brown ..... *flagrantis.*
b^8. Fore wing without white annuli to orbicular and reniform ..... *glennyi.*
b^4. Fore wing with the ante- and postmedial lines almost obsolete.
a^5. Fore wing with the subterminal line represented by an irregular series of white marks with slight dark streaks before them ..... *riparia.*
b^5. Fore wing with the subterminal line represented by an oblique series of white marks with strong dentate black marks before them ..... *cibalis.*
b^3. Fore wing without dentate dark marks before subterminal line.
a^4. Fore wing with the medial area concolorous.
a^5. Fore wing with the ante- and postmedial lines double ..... *melalutea.*
b^5. Fore wing with the ante- and postmedial lines single.
a^6. Fore wing with the orbicular and reniform absent.
a^7. Fore wing with the subterminal line absent ..... *extremis.*
b^7. Fore wing with the subterminal line represented by a diffused blackish shade ..... *chorda.*
b^6. Fore wing with the orbicular and reniform present.
a^7. Fore wing with the orbicular and reniform white without dark centres ..... *rosea.*
b^7. Fore wing with dark centres to orbicular and reniform.
a^8. Fore wing with the postmedial line almost obsolete from below costa to vein 2 ..... *simplicia.*
b^8. Fore wing with the postmedial line entire.
a^9. Fore wing with the ground-colour grey-brown.
a^{10}. Fore wing uniform in colour ..... *punctilinea.*
b^{10}. Fore wing with the terminal area darker ..... *baceri.*
c^{10}. Fore wing with the medial area darker. *homogena.*
b^9. Fore wing with the ground-colour fuscous black ..... *pohono.*
b^4. Fore wing with the whole medial area black-brown ..... *umbrifascia.*

b^1. Fore wing with black streaks in the interspaces of terminal area.
a^2. Fore wing with the medial area deep black to the reniform ..... *atrifasciata*.
b^2. Fore wing with the medial area not black.
a^3. Fore wing without black fascia from reniform to termen.
a^4. Fore wing with the orbicular and reniform absent.
a^5. Fore wing with the ante- and postmedial lines not connected by a black streak in submedian fold ..... *luteola*.
b^5. Fore wing with the ante- and postmedial lines connected by a black streak in submedian fold ..... *figurata*.
b^4. Fore wing with the orbicular and reniform present.
a^5. Fore wing with the orbicular and reniform not confluent.
a^6. Fore wing with the reniform large, ill-defined ..... *major*.
b^6. Fore wing with the reniform small, narrow, with white annulus ..... *ciliata*.
b^5. Fore wing with the orbicular and reniform confluent.
a^6. Hind wing tinged with ochreous and with sharply-defined terminal band ..... *poliochroa*.
b^6. Hind wing not tinged with ochreous and with dark suffusion on terminal area.
a^7. Fore wing with the postmedial line distinct ..... *calycula*.
b^7. Fore wing with the postmedial line almost obsolete.
a^8. Fore wing with the black streaks in interspaces of terminal area interrupted by slight white marks at subterminal line... *chandleri*.
b^8. Fore wing with the black streaks in interspaces of terminal area entire.
a^9. Fore wing with the claviform white defined by black ..... *extrusa*.
b^9. Fore wing with the claviform not differentiated from the black streak in submedian fold ..... *tetrops*.
b^3. Fore wing with black fascia from reniform to termen ..... *grisescalis*.
c^3. Fore wing with black fascia from orbicular through reniform to termen.
a^4. Fore wing with the black discal fascia well separated from the black fascia below base of cell ..... *nigrocaput*.
b^4. Fore wing with the black discal fascia confluent with the black fascia below base of cell. *atricolaris*.

*2252. Oncocnemis mirificalis. (Plate CIV. fig. 1.)

Oncocnemis mirificalis, Grote, Bull. Geol. Geog. Surv. Terr. v. p. 207 (1879); Smith, Cat. Noct. N. Am. p. 158.

Head and thorax dull fuscous brown; tegulæ with black line near base; abdomen yellowish tinged with fuscous. Fore wing

dull fuscous brown ; subbasal line absent ; antemedial line oblique, obsolete below median nervure ; a black streak below base of cell to the narrow elongate claviform, which has a whitish annulus defined by black ; orbicular elongate elliptical, with fuscous centre and white annulus defined by black, connected by a strong black streak with the reniform, which is small, narrow, with central fuscous line and white annulus defined by black ; postmedial line rather indistinct, single, bent outwards below costa, excurved to vein 4, then incurved, the area beyond it whitish, then darkening to the very irregular narrow white subterminal line, which is defined on inner side by dentate black marks and on outer by black points ; terminal area dark ; a slight dark terminal line ; cilia fuscous intersected by dark brown and with a fine pale line at base. Hind wing yellow, the terminal area broadly black. Underside of both wings yellow with broad black terminal band.

Hab. U.S.A., Nevada, California, Nevada Co. *Exp.* 25–28 millim. This species is unknown to me ; figured from a drawing from specimen in U.S. Nat. Mus.

2253. Oncocnemis dayi. (Plate XCIX. fig. 13.)

Oncocnemis dayi, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 105, pl. 3. f. 8 (1873); Smith, Cat. Noct. N. Am. p. 158.

♀. Head and thorax brown mixed with white and black ; tegulæ with black line near base and whitish tips ; tarsi ringed with white ; abdomen fuscous brown irrorated with white. Fore wing grey, almost wholly suffused with purplish brown ; subbasal line black, defined by white on outer side, from costa to submedian fold ; antemedial line rather indistinct, filled in with white, somewhat dentate ; claviform whitish defined by black and with black streak from its extremity to postmedial line ; orbicular and reniform with black and brown centres and whitish annuli defined by black, the former small, round, the latter with whitish patch beyond it ; a diffused waved medial line ; postmedial line defined by whitish on outer side, bent outwards below costa, excurved to vein 4, then incurved to below reniform and sinuous to inner margin, some white points beyond it on costa ; subterminal line indistinct, white, interrupted, defined by black streaks and wedge-shaped marks on inner side, except towards costa and inner margin, extending to postmedial line, somewhat excurved below costa and at middle and incurved below vein 3 ; a slightly waved black terminal line ; cilia chequered black and white and with black line through them. Hind wing pale yellow suffused with brown at base, the terminal area broadly black ; cilia white with a dark line through them ; the underside with the costal area slightly irrorated with fuscous, a small discoidal lunule, some white on termen before the black terminal line.

Hab. U.S.A., Colorado, 1 ♀. *Exp.* 34 millim.

2254. Oncocnemis hayesi. (Plate XCIX. fig. 14.)

Oncocnemis hayesi, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 106, pl. iii. f. 13 (1873); Smith, Cat. Noct. N. Am. p. 158.

♂. Head and thorax rufous slightly mixed with brown; tarsi banded with black; abdomen orange slightly irrorated with fuscous, the ventral surface whitish. Fore wing pale rufous irrorated with brown, the submedian fold redder, the terminal area browner, the lines with black spots on costa; subbasal line represented by black striæ from costa and cell; antemedial line oblique, waved; orbicular and reniform with pale annuli, undefined, the former round; a diffused waved brown medial line; postmedial line oblique from costa to vein 6, then minutely dentate, excurved to vein 4, then incurved; subterminal line only defined by diffused fuscous on its inner side, somewhat dentate, slightly angled outwards at vein 7 and incurved below vein 3; a terminal series of black striæ; cilia ochreous with a brown line through them. Hind wing orange, slightly irrorated with brown; the terminal area broadly black with waved inner edge; cilia yellow with dark line near base and whitish tips; the underside with minute discoidal lunule.

Hab. Canada, Br. Columbia; U.S.A., Colorado, 1 ♂, California, Nevada Co. *Exp.* 34 millim.

*2255. Oncocnemis regina. (Plate XCIX. fig. 15.)

Oncocnemis regina, Smith, J. N.Y. Ent. Soc. x. p. 44 (1902); Dyar, Cat. Lep. N. Am. p. 126.

♂. Head and thorax pale grey tinged with ochreous, the head and base of tegulæ slightly tinged with rufous, the thorax irrorated with black; abdomen ochreous white. Fore wing pale grey tinged with ochreous and with slight dark irroration, the markings indistinct; subbasal line slight, single; antemedial line single, evenly curved; claviform absent; orbicular moderate with yellowish annulus defined by brown, round; reniform moderate, yellowish with a grey shade in centre; an indistinct diffused brown medial band; postmedial line single, blackish, bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved; subterminal line indistinct, yellowish defined by diffused fuscous on inner side, somewhat angled outwards at vein 7 and excurved at middle; cilia yellowish, with a series of brown lunules. Hind wing pale yellow; the terminal area black, broadly at costa, narrowing to tornus; cilia yellowish. Underside of both wings yellow, with broad black terminal band and the cilia yellowish.

Hab. Canada, Assiniboia, Regina (*Fletcher*). *Exp.* 28 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2256. Oncocnemis euta. (Plate XCIX. fig. 16.)

Oncocnemis euta, Smith, J. N.Y. Ent. Soc. xi. p. 11 (1903).

Head and thorax grey mixed with pale and dark brown; neck with fulvous ring; tegulæ with blackish line near base and blackish tips; abdomen yellow-brown irrorated with fuscous. Fore wing brown suffused with grey and with slight dark irroration; a slight black streak below base of cell; subbasal line represented by an oblique striga from costa; antemedial line very indistinct, waved, interrupted, oblique from costa to submedian fold; claviform small, whitish, very indistinctly defined; orbicular and reniform small with brown centres and whitish annuli defined by black, the former rather elongate elliptical; a slight diffused medial shade; postmedial line very indistinct and slightly waved, bent outwards below costa to an angle at vein 6, incurved below vein 4 and touching lower edge of reniform; the terminal area broadly suffused with fuscous, the subterminal line represented by slight grey lunules on small dentate black marks, angled outwards at vein 7 and excurved at middle; cilia chequered grey and blackish. Hind wing yellow with broad terminal black band; cilia brown at base, whitish at tips; the underside with the costal area irrorated with brown.

Hab. U.S.A., Utah, 1 ♂, 1 ♀. *Exp.* 24–32 millim.

*2257. Oncocnemis corusca. (Plate CIV. fig. 2.)

Oncocnemis corusca, Smith, J. N.Y. Ent. Soc. vii. p. 40 (1899); Dyar, Cat. Lep. N. Am. p. 126.

♂. Head and thorax blackish mixed with white scales, frons darker; tegulæ and patagia edged with white; abdomen yellowish. Fore wing blackish irrorated with white, very dark to postmedial line and with a silky gloss; the base irrorated with grey; the subbasal line defined by grey; antemedial line hardly traceable, represented by some grey scales; orbicular small, round, with whitish annulus; reniform moderate, whitish with dark discoidal line, its outer edge and the area beyond it to postmedial line suffused with whitish; postmedial line white, indistinct to vein 4, then more prominent; subterminal line white, obsolescent except towards tornus; a terminal series of obscure dark lunules. Hind wing orange-yellow with well-defined, moderately broad, black terminal band; cilia white; the underside yellow with blackish shading on costal area and blackish terminal band.

Hab. U.S.A., California, Los Angeles, Yosemite Valley. *Exp.* 27 millim. This species is unknown to me; figured from a drawing from type in U.S. Nat. Mus.

*2258. Oncocnemis exemplaris. (Plate XCIX. fig. 17.)

Oncocnemis exemplaris, Smith, Trans. Am. Ent. Soc. xxi. p. 64, pl. 6. f. 8 (1894); Dyar, Cat. Lep. N. Am. p. 127.

♂. Head and thorax grey-white mixed with black; tegulæ with black medial line; patagia with blackish line near margins;

abdomen blackish. Fore wing grey-white irrorated with blackish; subbasal line black defined by white on inner side; antemedial line black defined by whitish on outer side, oblique waved; claviform represented by a slight whitish streak; orbicular small, round, with blackish centre and whitish annulus; reniform narrow, black and white with white suffusion beyond it extending to just beyond postmedial line, which is double at costa, then single, slightly bent outwards below costa, excurved to vein 4, then somewhat incurved, defined by whitish on outer side; subterminal line very irregular, whitish, defined on inner side by black suffusion and slight dentate black marks, angled outwards at veins 7, 6, 4, 3 and inwards at discal and submedian folds; terminal area rather paler except at apex; a terminal series of small black lunules; cilia blackish intersected with white. Hind wing black with a large medial triangular whitish patch from costa to vein 1; a blackish discoidal lunule; cilia white. Underside black with broad white medial band; fore wing with the termen white expanding into irregular patches.

Hab. U.S.A., California, Yosemite Valley. *Exp.* 25 millim. The species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2259. **Oncocnemis albifasciata**, n. n. (Plate XCIX. fig. 18.)

Oncocnemis fasciatus, Smith, Ins. Life, i. p. 18 (1888), nec H. Edw. 1886; Smith, Cat. Noct. N. Am. p. 159.

♂. Head, thorax, and abdomen dull fuscous grey irrorated with a few black scales; tegulæ with slight medial dark line and line near tips. Fore wing with the basal half pale ash-grey irrorated with dark scales; subbasal line prominent, black, from costa to submedian fold; antemedial line prominent, black, excurved below costa and cell; claviform defined by black at extremity; orbicular and reniform moderate, the former round with red-brown centre and whitish annulus defined by black, the latter white defined by black; a diffused medial black line angled outwards on subcostal and median nervures, then incurved; postmedial line black, bent outwards below costa, very strongly incurved below vein 4 to lower edge of reniform and origin of vein 2; postmedial area whitish, then brown suffused with fuscous, indented by whitish streaks at veins 6 and 5; some white points on costa towards apex; subterminal line whitish with black suffusion before it and grey-brown beyond it, defined on inner side at middle by dentate black marks, somewhat dentate and at veins 7, 6, 4, 3 almost to termen; a terminal series of small black lunules; cilia chequered whitish and fuscous. Hind wing with the basal area dull smoky brown followed by an oblique diffused black antemedial line, then a broad white band, the terminal half black; cilia black at base, white at tips; the underside with the antemedial band very strong, the white area angled outwards into the black at discal fold.

Hab. Canada, N.W. Brit. Columbia, 1 ♂; U.S.A., Colorado, California, Nevada Co. *Exp.* 32 millim.

*2260. Oncocnemis melantho. (Plate CIV. fig. 3.)

Oncocnemis melantho, Smith, J. N.Y. Ent. Soc. vii. p. 37 (1899); Dyar, Cat. Lep. N. Am. p. 126.

Head ochreous-yellow irrorated with black; tegulæ yellow with medial black line; thorax mottled white and black, the tip of prothoracic crest yellow. Fore wing with the base whitish; subbasal line black; antemedial area blackish at costa, whitish to median nervure, ochreous to vein 1, and grey shading to ochreous outwardly at inner margin; antemedial line double, the inner line very indistinct, the outer oblique to median nervure, then recurved; claviform ill-defined, yellowish; orbicular almost round, whitish with a few grey scales in centre; reniform yellow defined by black and with fuscous centre; medial shade broad, black, irregular; medial area whitish at costa, greyish in cell, and yellowish through middle; postmedial line double, the outer line indistinct except towards costa, bent outwards below costa, then minutely dentate and produced to white points on the veins, excurved to vein 4, then incurved; postmedial area yellowish irrorated with grey and black scales and paler towards costa; the veins of terminal area irrorated with white; subterminal line interrupted, irregular, chiefly defined by dark shades before and beyond it, the most prominent being a blackish shade at costa and dark shades irrorated with grey at middle and inner margin; terminal area grey with black shades in interspaces; a terminal series of black striæ; cilia yellowish intersected with fuscous. Hind wing black with pale ochreous medial band with the veins and discoidal lunule black; cilia white; the underside creamy white with broad black terminal band.

Hab. U.S.A., California, Yosemite Valley. *Exp.* 34 millim. This species is unknown to me; figured from a drawing from type in U.S. Nat. Mus.

2261. Oncocnemis pudorata. (Plate XCIX. fig. 19.)

Oncocnemis pudorata, Smith, Ent. News, Philad. iv. p. 99, pl. vi. f. 8 (1893); id. Trans. Am. Ent. Soc. xxi. p. 63, pl. ii. f. 8 (1894); Dyar, Cat. Lep. N. Am. p. 126.

Head, thorax, and abdomen whitish tinged with brown and largely mixed with black. Fore wing fuscous mixed with grey, the postmedial area suffused with white; subbasal line represented by slight black spots below costa and cell; antemedial line single, diffused, black, waved, oblique; claviform moderate, hardly defined; orbicular and reniform moderate with faint greyish annuli, undefined, the former round; an indistinct diffused, waved, dark medial line; postmedial line indistinct, diffused, slightly bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved; subterminal line defined by diffused fuscous and with slight dentate black marks on inner side, dentate, angled outwards at vein 7 and at middle; a terminal series of small black lunules; cilia whitish mixed with fuscous and with dark line through them. Hind wing

with the basal area whitish suffused with fuscous brown to the diffused blackish medial line, excurved at middle and followed by a white band, the veins on it with dark streaks; terminal area fuscous black with sinuous inner edge; cilia white with slight dark line through them; the underside with the basal area rather whiter.

Hab. Canada, Br. Columbia, Hope Pass (*Mrs. Nicholl*), 1 ♂, 1 ♀, Laggan, Agnes Lake. *Exp.* 30–34 millim.

2262. Oncocnemis tenuifascia. (Plate XCIX. fig. 20.)

Oncocnemis tenuifascia, Smith, Ins. Life, i. p. 18 (1888); id. Cat. Noct. N. Am. p. 159.

Head and thorax brown mixed with black and a few whitish scales; tegulæ with black lines at middle and near tips; tarsi blackish, with pale rings; abdomen fuscous brown tinged with greyish. Fore wing brown suffused with fuscous and greyish, some whitish suffusion beyond postmedial line; subbasal line black, excurved, from costa to submedian fold; antemedial line indistinctly double, oblique, waved; claviform small, brown defined by black; orbicular and reniform small, with fuscous centres and whitish annuli defined by black, the former round; a diffused waved black medial line; postmedial line double filled in with whitish, slightly bent outwards below costa, excurved to vein 4, then strongly incurved, some slight black streaks beyond it on the veins and some pale points on costa; subterminal line pale, defined on inner side by slight dentate black marks, excurved at vein 7 and middle; a terminal series of small black lunules; cilia chequered fuscous and brown and with fuscous line near base. Hind wing with the basal area brown; a sinuous fuscous medial band followed by an ochreous white band, the terminal area fuscous; cilia white, fuscous at base. Underside of both wings grey-brown with curved black medial band followed by an ochreous-white band, the terminal area of hind wing black.

Hab. U.S.A., Colorado, Hall Valley, 1 ♂, S. Park (*Oslar*), 3 ♂, 1 ♀. *Exp.* 26 millim.

2263. Oncocnemis exacta.

Oncocnemis exacta, Christ. Rom. Mém. iii. p. 72, pl. 4. f. 1 (1887); Staud. Cat. Lep. pal. p. 176.
Oncocnemis mongolica, Staud. Iris, ix. p. 260 (1896).

♂. Head and thorax grey-brown irrorated with fuscous; tarsi black ringed with white; abdomen whitish irrorated with brown, the anal tuft ochreous. Fore wing pale grey-brown irrorated with dark brown, the terminal area suffused with fuscous to near postmedial line; subbasal line represented by black striæ from costa and cell; antemedial line oblique, waved; claviform faintly defined by a few dark scales; orbicular and reniform ochreous white defined by black and with brown centres, the former small, rather elongate

elliptical; traces of a diffused medial line; postmedial line defined by whitish suffusion on outer side and on inner side below the cell, bent outwards below costa, excurved to vein 4, then oblique waved, some ochreous-white points beyond it on costa; subterminal line hardly traceable, somewhat dentate, angled outwards at vein 7 and incurved below vein 3; a slight dark terminal line; cilia ochreous white with a brown line through them. Hind wing white, the veins fuscous; the terminal area broadly fuscous; cilia white, tinged with ochreous at base and with brown line through them. Underside of both wings white, the costal areas irrorated with brown, the terminal areas broadly fuscous.

Ab. 1. *mongolica*. Darker; fore wing with a reddish tinge on basal half.—Mongolia.

Hab. W. Turkestan, Turcomania, Issyk Kul; E. Turkestan, Ili; Mongolia, Uliassutai, 1 ♂. *Exp.* 36 millim.

*2264. Oncocnemis balteata. (Plate XCIX. fig. 21.)

Oncocnemis balteata, Smith, J. N.Y. Ent. Soc. x. p. 43 (1902); Dyar, Cat. Lep. N. Am. p. 126.

♂. Head grey-white irrorated with black, with black lines across frons and between antennæ; thorax reddish ochreous mixed with white; tegulæ with black and white lines, ochreous at tips; abdomen brown, the base whitish tinged with rufous. Fore wing reddish ochreous at base shading to dark brown which extends to middle of wing, followed by a broad white band shading through rufous to the fuscous terminal area; subbasal line represented by double black striæ from costa; antemedial line double, somewhat oblique, excurved in interspaces; claviform minute, white defined by black; orbicular small, round, with brown centre and white annulus defined by black; reniform large, very incompletely defined by rufous; postmedial line double at costa, then single, slightly bent outwards below costa, excurved to vein 4, then strongly incurved; subterminal line very near termen, interrupted, irregular, represented by whitish lunules defined on inner or outer side by irregular black spots; a terminal series of black striæ; cilia brown at base, chequered brown and white at tips. Hind wing white, slightly tinged with rufous at base and with a broad black terminal band; cilia white; the underside white, the costal area irrorated with black towards base, a small discoidal spot and broad black terminal band.

Hab. U.S.A., Colorado, Poncho Springs. *Exp.* 25 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2265. Oncocnemis terminalis. (Plate XCIX. fig. 22.)

Oncocnemis terminalis, Smith, Ins. Life, i. p. 19 (1888); id. Cat. Noct. N. Am. p. 159.

♂. Head and thorax pale red-brown mixed with black and some

white; upper part of frons black; tegulæ with black line near base and band near tips; tarsi banded with black; abdomen white slightly suffused with pale olive-brown. Fore wing pale rufous, the terminal area suffused with fuscous black; subbasal line represented by slight black striæ from costa and cell; a black patch on inner area before the antemedial line, which is represented by double black points on costa and points on vein 1 and inner margin, almost obsolete between those points; orbicular and reniform small with whitish annuli slightly defined by black, the former round; medial line represented by a black striga from costa and points at median nervure, submedian fold, and vein 1; postmedial line represented by a black spot on costa, then almost obsolete, bent outwards below costa, excurved to vein 4, then represented by an oblique series of black points; the veins of terminal area streaked with black; subterminal line represented by a series of small dentate whitish marks defined on inner side by dentate black marks, dentate to termen at veins 4, 3; a terminal series of small black lunules: cilia whitish tinged with rufous and intersected with black. Hind wing nearly pure white, the terminal area black, broadly at costa, narrowing to a point at tornus, its inner edge somewhat sinuous; a small white spot on termen at submedian fold; cilia pure white; the underside with postmedial series of black points on inner edge of black area.

Hab. U.S.A., Colorado, Denver, 1 ♂, Boulder. *Exp.* 38 millim.

2266. Oncocnemis iricolor. (Plate XCIX. fig. 23.)

Oncocnemis iricolor, Smith, Ins. Life, i. p. 19 (1888); id. Cat. Noct. N. Am. p. 159.

♂. Head and thorax pale rufous mixed with white and irrorated with a few black scales; palpi with the 3rd joint black above; frons with black bar; pectus and legs white, the extremity of tibiæ and tarsi ringed with black; abdomen white slightly tinged with ochreous and irrorated with fuscous. Fore wing ochreous white suffused and striated with rufous and irrorated with a few black scales; subbasal line very indistinct, black, from costa to submedian fold; a diffused silvery-blue band before the antemedial line; antemedial line black, slightly angled inwards below costa, then oblique, waved; a slight patch of silvery blue on middle of inner margin; orbicular and reniform whitish defined by a few black scales and with some brown in centres, the former small, round, the latter rather produced at lower extremity; medial line represented by a small black spot on costa; postmedial line with two small black spots at costa, then single, strongly bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved to below reniform and slightly defined on each side by white, some black and white marks beyond it on costa; subterminal line white defined on inner side by three patches of silvery blue and by some small dentate black marks, dentate outwards at veins 7, 6, 4, 3; a

terminal series of small black lunules slightly defined by white on inner side; cilia pure white with fine waved brown medial line and brown striæ at tips. Hind wing white tinged with ochreous, the terminal area fuscous black, narrowing somewhat to inner margin and with minutely waved inner edge; cilia pure white; the underside nearly pure white, the costa slightly tinged with brown, a black discoidal lunule and fine somewhat sinuous postmedial line showing through to upperside; both wings with broad black terminal band.

Hab. U.S.A., Colorado, Denver, Berkeley (*Oslar*), 5 ♂. *Exp* 32–36 millim.

2267. **Oncocnemis levis.** (Plate XCIX. fig. 24.)

Oncocnemis levis, Grote, Can. Ent. xii. p. 254 (1880); Smith, Cat. Noct. N. Am. p. 159.

♂. Head and thorax brown mixed with black and white; tegulæ whitish with black line near base and dark brown lines at middle and near tips; pectus and legs whitish, the tarsi banded with black; abdomen grey-white irrorated with black, the anal tuft tinged with ochreous. Fore wing pale reddish brown tinged with grey and fuscous, the interspaces beyond postmedial line white, the veins of terminal half streaked with black; subbasal line double, black filled in with whitish, from costa to submedian fold; antemedial line double, black filled in with whitish, strongly angled outwards below costa and inwards in submedian fold to the subbasal line and slightly on vein 1; claviform whitish defined by black, narrow, elongate, extending to postmedial line; orbicular and reniform small, narrow, whitish defined by black and their centres defined by black, the former oblique elliptical; a medial black spot on costa; postmedial line double filled in with whitish, slightly bent outwards below costa, then minutely dentate, strongly incurved below vein 4; subterminal line formed of white dentate marks defined on inner side by wedge-shaped black marks and with black streaks beyond it in the interspaces; a terminal series of small black lunules; cilia white with a fuscous line through them. Hind wing white tinged with brownish ochreous, the terminal area broadly black; cilia white with a slight dark line through them. Underside of both wings whitish with small discoidal spot and indistinct curved postmedial line, the terminal area broadly fuscous.

Hab. U.S.A., Colorado, 1 ♂ type (*Cockerell*), 2 ♂, Golden City, Denver, Glenwood Springs, Arizona. *Exp.* 32 millim.

2268. **Oncocnemis simplex.** (Plate XCIX. fig. 25.)

Oncocnemis simplex, Smith, Ins. Life, i. p. 20 (1888); id. Cat. Noct. N. Am. p. 159.

♀. Head and thorax white mixed with pale reddish brown and a few black scales; frons with brown bar; tegulæ with black line near base and brown line near tips; tarsi blackish ringed with

white; abdomen white irrorated with brown. Fore wing whitish suffused with pale brown and fuscous, leaving a white patch beyond the postmedial line on inner half; the veins of terminal half streaked with black; a slight black streak below base of cell; subbasal line double, from costa to submedian fold; antemedial line double, black filled in with white, angled outwards below costa and inwards in submedian fold, on vein 1 and to inner margin; claviform very narrow, slightly defined by black; orbicular and reniform white defined by black, and with some brown in centres, the former round; an indistinct diffused waved medial line; postmedial line indistinctly double filled in with white, bent outwards below costa, then minutely dentate, below vein 4 incurved to lower edge of reniform; subterminal line represented by a series of white dentate marks defined on inner side by wedge-shaped black marks and with black marks beyond them; a slightly waved black terminal line; cilia white with fine brown lines through them. Hind wing white tinged with brown, the terminal area broadly fuscous with sinuous inner edge; traces of a sinuous postmedial line; cilia white with a fine brown line near base. Underside of both wings white, the terminal area broadly fuscous with sinuous inner edge.

Hab. U.S.A., Utah, Ashley Valley, Colorado, Berkeley, 1 ♀. *Exp.* 32 millim.

2269. Oncocnemis saundersiana. (Plate XCIX. fig. 26.)

Oncocnemis saundersiana, Grote, Can. Ent. viii. p. 29 (1876); Smith, Cat. Noct. N. Am. p. 160.

♂. Head and thorax deep brownish fuscous; metathoracic crest black; abdomen brown with a golden gloss. Fore wing pale brown with a golden gloss; the inner area to antemedial line and the postmedial area suffused with whitish, the veins of terminal area streaked with black; subbasal line double, curved, from costa to submedian fold; antemedial line double, oblique, slightly sinuous; claviform small, defined by black; orbicular and reniform small, with brown centres and greyish annuli defined by black, the former round; a prominent diffused blackish medial line slightly excurved at middle; postmedial line double, oblique from costa to vein 5, then strongly incurved; subterminal line formed of dentate whitish marks, defined on inner side at middle by wedge-shaped black marks and with black streaks beyond them, obsolescent towards costa and bent outwards to tornus. Hind wing whitish tinged with brown, especially on basal area, the terminal area suffused with fuscous; cilia white, brownish at base; the underside with slight discoidal lunule and indistinct curved postmedial line, obsolete on inner area.

Hab. Canada, Ontario, Grimsby (*Petitt*), 2 ♂ type; U.S.A., Illinois, Missouri, Texas. *Exp.* 30–32 millim.

2270. Oncocnemis pernotata. (Plate XCIX. fig. 27.)

Oncocnemis pernotata, Grote, Can. Ent. xv. p. 25 (1883); Smith, Cat. Noct. N. Am. p. 160.

Head and thorax grey-white tinged with brown and slightly mixed with black; tarsi banded with black; abdomen whitish tinged with brown. Fore wing whitish suffused and irrorated with brown, the terminal area darker; subbasal line represented by black striæ from costa and cell; antemedial line double, the inner line indistinct, the outer strong, black, obliquely excurved; claviform a diffused black streak extending to postmedial line; orbicular and reniform moderate with whitish annuli defined by black, the former with brown centre, round, the latter with its centre defined by brown; medial line represented by a small black spot on costa; postmedial line slightly bent outwards below costa, then dentate, below vein 4 strongly incurved and touching lower edge of reniform, at inner margin approximated to the antemedial line, some white suffusion beyond it on inner half; subterminal line hardly traceable except below vein 3, where it is incurved and whitish, with slight black streaks before it at middle; a fine black terminal line; cilia whitish at base, fuscous at tips. Hind wing white slightly tinged with brown; the veins darker; the terminal area suffused with fuscous from apex to vein 2; the underside with the costal area irrorated with fuscous; traces of a curved post-medial line.

Hab. U.S.A., Arizona, Pinal Mts., Gila Co. (*Kunzé*), 1 ♂, Maricopa Co., Phœnix (*Kunzé*), 1 ♂, Yavapai Co., Prescott (*Kunzé*), 1 ♂, 1 ♀.
Exp. 32 millim.

2271. Oncocnemis campicola. (Plate XCIX. fig. 28.)

Oncocnemis campicola, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 369, pl. 4. f. 5; Ev. Bull. Soc. Mosc. 1856, iii. p. 18; Staud. Cat. Lep. pal. p. 176.

Head and thorax grey mixed with brown and fuscous; tarsi blackish with pale rings; abdomen grey tinged with fuscous, the base and anal tuft whitish. Fore wing grey-brown tinged with fuscous, the inner area before antemedial line and the postmedial area below costa and from vein 4 to inner margin suffused with white; subbasal line black, from costa to submedian fold; the antemedial line black, curved, slightly sinuous; claviform small, defined by black; orbicular and reniform with brown centres and whitish annuli defined by black, the former round; a diffused sinuous medial line; postmedial line indistinctly double, filled in with whitish, bent outwards below costa, then minutely dentate, slightly incurved at discal fold and strongly below vein 4, some white points beyond it on costa; subterminal line indistinct, whitish, with black streaks before and beyond it in the interspaces except towards costa and inner margin, slightly excurved below costa and at middle; a fine terminal black line; cilia slightly inter-

sected with whitish. Hind wing white, the veins, costal and inner areas suffused with brown, the terminal area broadly fuscous; cilia ochreous at base, followed by a slight brown line and white tips; the underside white, the costal area irrorated with brown, the terminal area suffused with fuscous.

Hab. W. Turkestan, Saisan, Issyk Kul; W. Siberia, Altai, Zeller and d'Emmich Colls.; E. Turkestan, Ili; Mongolia, Urga; E. Siberia, Kentei, Amurland. *Exp.* 32–36 millim.

*2272. Oncocnemis polingi.

Oncocnemis polingii, Barnes, Can. Ent. xxxvi. p. 169 (1904).

♂. Head and tegulæ buff mixed with black and white; two black bands between antennæ and three on tegulæ white, one white at tips; thorax and patagia clothed with buff, black, and white scales; abdomen buff with a few black hairs and slight band on terminal segment; pectus and ventral surface of abdomen paler; legs buff banded with black. Fore wing pale brown, the postmedial area paler; subbasal line single, black, from costa to submedian fold, emitting a streak on median nervure to antemedial line, which is stronger at costa, inwardly oblique to median nervure, then outwardly oblique and waved, double, the inner line less distinct; claviform large, defined by black, touching the orbicular, which is large, elongate elliptical, bluish grey defined by black; reniform defined by black; medial shade strong, blackish, especially towards costa, oblique from costa to median nervure, then approximated to the postmedial line, which is stronger at costa, excurved to vein 4, then incurved to lower edge of reniform and waved to inner margin, double, the outer line indistinct; subterminal line indistinct, pale, irregular, hardly defined except by the contrast between the postmedial and terminal areas, and with three slight dentate brown marks on inner side towards inner margin; the veins of terminal area irrorated with black, the interspaces slightly irrorated with brown; a fine terminal black line. Hind wing yellowish white, the veins and terminal area broadly suffused with black, a slight discoidal point and curved postmedial line; cilia white, brown at base; the underside yellowish white, the area beyond postmedial line blackish, a medial black spot on costa and slight discoidal point, the postmedial line with black points at the veins.

Hab. U.S.A., S. Arizona. *Exp.* 28 millim. This species is unknown to me.

2273. Oncocnemis fasciata. (Plate XCIX. fig. 29.)

Perigea fasciata, H. Edw. Ent. Am. ii. p. 169 (1886); Smith, Cat. Noct. N. Am. p. 154.

♀. Head, thorax, and abdomen grey-white mixed with brown and fuscous; tegulæ with slight diffused dark lines near base and tips. Fore wing grey-white irrorated with fuscous brown; the

terminal half suffused with brown; subbasal line represented by a dark striga from costa; antemedial line indistinct, double, minutely waved, somewhat oblique; orbicular and reniform hardly traceable, with faint whitish annuli, the former rather elongate elliptical; a diffused blackish shade before the postmedial line angled outwards at lower angle of cell; postmedial line hardly traceable, slightly bent outwards below costa, then minutely waved, excurved to vein 4, then incurved; subterminal line very indistinct, dark, slightly angled outwards at vein 7 and excurved at middle, with greyer patch beyond it at tornus and slight dentate dark marks on its inner side. Hind wing pale grey, the terminal area suffused with fuscous, the underside with slight discoidal lunule and postmedial series of minute dark streaks on the veins.

Hab. U.S.A., Colorado desert (*Stretch*), 1 ♀ co-type. *Exp.* 28 millim.

2274. Oncocnemis confusa.

Noctua confusa, Frr. Neue Beitr. iv. pl. 303. f. 1 (1839); Ev. Faun. Ur. Volg. p. 206; id. Bull. Mosc. 1856, ii. p. 223; Herr.-Schäff. Eur. Schmett., Noct. ff. 44–5; Staud. Cat. Lep. pal. p. 176.
Agrotis diffusa, Guen. Noct. iii. p. 399 (1852).
Oncocnemis rufescens, Staud. Cat. Lep. Eur. p. 94 (1871).

Head and thorax grey-brown mixed with some fuscous; pectus and legs pale ochreous; abdomen pale ochreous suffused with brown. Fore wing grey-brown irrorated with fuscous; subbasal line represented by two striæ from costa; antemedial line double, waved, somewhat oblique; claviform very indistinct, small, pale, defined by a few dark scales; orbicular and reniform pale faintly defined by fuscous, the former elongate, the latter small; a waved medial line forming a dark patch between the stigmata; postmedial line double at costa, then single, minutely dentate, and produced to dark streaks on the veins, excurved to vein 4, then incurved; subterminal line pale defined by fuscous, and with slight dentate dark marks on inner side, slightly angled outwards at vein 7 and excurved at middle, the area beyond it somewhat darker; a terminal series of small black lunules; cilia with a fine ochreous line at base. Hind wing pale ochreous tinged with brown, the terminal area suffused with fuscous; cilia ochreous with a brown line near base; the underside whitish slightly irrorated with brown, the terminal area suffused with fuscous; a discoidal point and slight curved postmedial line.

Ab. 1. *rufescens*. Head, thorax, and fore wing with the ground-colour pale rufous.—Urals.

Hab. Russia, Urals, Zeller and d'Emmich Colls., Sarepta, Zeller and Crowley Colls.; Armenia; W. Turkestan, Turcomania. *Exp.* 30–36 millim.

*2275. Oncocnemis meadiana.

Oncocnemis meadiana, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 60; Smith, Cat. Noct. N. Am. p. 160.

Head and thorax bluish grey; abdomen whitish. Fore wing bluish grey; subbasal line absent; antemedial line single, regularly curved; medial area slightly darker; claviform absent; orbicular well developed, defined by black and with blackish centre, round; reniform suffused with reddish and incompletely defined by black; a rather diffused medial shade; postmedial line incurved from costa to inner margin, intersecting lower part of reniform; subterminal line indistinct, pale, defined on each side by blackish marks, irregularly interrupted; a terminal series of black lunules; cilia with a fine white line at base. Hind wing whitish with a diffused fuscous terminal band; the underside white, the terminal area suffused with fuscous.

Hab. U.S.A., Arizona. *Exp.* 28 millim. This species is unknown to me.

2276. Oncocnemis nigricula.

Agrotis nigricula, Ev. Bull. Soc. Mosc. 1847. iii. p. 79; Herr.-Schäff. Eur. Schmett., Noct. f. 627; Staud. Cat. Lep. pal. p. 176.

Head and thorax olive-brown tinged with fuscous; abdomen pale olive-brown. Fore wing glossy olive-brown tinged with fuscous; subbasal line represented by slight fuscous strigæ from costa and cell; antemedial line single, indistinct, waved; orbicular and reniform very faintly defined by fuscous, the former rather elongate elliptical; traces of a waved medial line; postmedial line with some diffused grey beyond it, double at costa, bent outwards below costa, then minutely dentate, excurved to vein 4, then bent inwards to below the reniform, some grey points beyond it on costa; subterminal line very indistinct, greyish slightly defined by fuscous dentate marks on inner side, slightly angled outwards at vein 7 and incurved below vein 3; a fine black terminal line; cilia with a dark line near base. Hind wing whitish tinged with brown, the terminal area broadly fuscous; a discoidal lunule; cilia whitish with a brown line near base.

Hab. Russia, Sarepta, Zeller Coll.; W. Turkestan, Saisan; W. Siberia, Altai; Kamtschatka. *Exp.* 32 millim.

2277. Oncocnemis occata. (Plate XCIX. fig. 30.)

Cleophana occata, Grote, Trans. Am. Ent. Soc. v. p. 114 (1874); id. Bull. Buff. Soc. Nat. Sci. iii. pp. 9, 16, pl. 11. f. 6; Smith, Cat. Noct. N. Am. p. 160.

♂. Head and thorax pale rufous mixed with whitish; upper part of frons and vertex of head black; tegulæ with large blackish patches; tarsi banded with black; abdomen white irrorated with fuscous. Fore wing pale rufous, the inner area to antemedial line and beyond the

postmedial line suffused with white, the veins of terminal half streaked with black; subbasal line black, curved, from costa to submedian fold; antemedial line oblique, waved, angled inwards in submedian fold; orbicular and reniform with slight whitish annuli, slightly and incompletely defined by black, the former round; a diffused black medial line, excurved at middle and forming a black spot on costa and prominent patch from vein 2 to inner margin; postmedial line double, the outer line indistinct, slightly bent outwards below costa, then dentate, excurved to vein 4, then strongly incurved; subterminal line formed of slight dentate white marks with short black streaks before and beyond them; a terminal series of slight black lunules; cilia chequered whitish and black. Hind wing white faintly tinged with brown; the veins darker; the terminal area suffused with fuscous; cilia white with some fuscous points at base; the underside with the costal area slightly irrorated with brown; a discoidal point and postmedial series of minute streaks on the veins from costa to vein 2.

Hab. U.S.A., Texas (*Belfrage*), 2 ♂ type, Colorado, California, Arizona, Maricopa Co., Phœnix (*Kunzé*), 1 ♂. *Exp.* 26–32 millim.

2278. Oncocnemis strioligera.

Oncocnemis strioligera, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 368, pl. 5. f. 1; Ev. Bull. Mosc. 1856, ii. p. 218; Staud. Cat. Lep. pal. p. 176.

♂. Head and thorax pale brownish ochreous; tegulæ with black line near base; tarsi banded with black; abdomen whitish tinged with fuscous. Fore wing pale ochreous tinged with brown and irrorated with fuscous; a more or less distinct black streak below

Fig. 47.—*Oncocnemis strioligera*, ♂. ½.

base of cell; subbasal line black, curved, from costa to submedian fold; antemedial line black, excurved from costa to submedian fold, where it is angled inwards, then slightly dentate and somewhat oblique; claviform small, slightly defined by black; orbicular and reniform small defined by black and with slight brown centres, the former rather elongate elliptical; an indistinct medial line oblique from costa to median nervure, then sinuous; postmedial line black, oblique from costa to vein 6, where it is angled outwards, then inwardly oblique, waved; subterminal line formed of slight pale marks defined on inner side by wedge-shaped black marks, above and below vein 5 extending to near postmedial line, arising from

near apex and angled outwards at vein 7; a slightly waved black terminal line; cilia with a fine ochreous line at base. Hind wing whitish, the veins and terminal area suffused with fuscous; cilia white; the underside white with the costal and terminal areas irrorated with fuscous.

Hab. Syria, 2 ♂, Leech Coll.; W. Turkestan, Issyk Kul, 1 ♂; W. Siberia, Altai; E. Turkestan, Ili; Mongolia, Uliassutai. *Exp.* 34 millim.

*2279. Oncocnemis viriditincta. (Plate XCIX. fig. 31.)

Oncocnemis viriditincta, Smith, Trans. Am. Ent. Soc. xxi. p. 66, pl. vi. f. 12 (1894); Dyar, Cat. Lep. N. Am. p. 126.

♀. Head and thorax rufous tinged with olive and mixed with white, the head darker; tegulæ strongly mixed with black and white scales and with whitish tips; abdomen whitish tinged with rufous. Fore wing rufous tinged with olive; subbasal line single, black, from costa to submedian fold; antemedial line black slightly defined by white on inner side, somewhat oblique, waved; claviform small, irrorated with white and defined by black; orbicular small, round, white defined by black; reniform small, white defined by black and with brown lunule in centre; medial line rather indistinct and irregular, bent outwards from below costa to below cell; postmedial line black slightly defined by white on outer side, bent outwards below costa, then waved, oblique below vein 4; subterminal line whitish slightly defined by blackish on inner side, angled outwards at vein 7, then irregularly waved; a terminal series of small black lunules; cilia pale intersected with fuscous, and with slight dark line near base. Hind wing pale tinged with brown, the veins and terminal area suffused with brown; a slight dark postmedial line; cilia white with a slight dark line near base; the underside grey irrorated with brown; a dark postmedial line and terminal band.

Hab. Canada, Ontario, Hamilton, Assiniboia, McLean. *Exp.* 30 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2280. Oncocnemis laticosta. (Plate XCIX. fig. 32.)

Oncocnemis laticosta, Dyar, Proc. Ent. Soc. Wash. vi. p. 63 (1904).

Head and thorax ochreous white mixed with fuscous; frons with blackish bar; tegulæ whitish tinged with rufous, and with brown tips; pectus and legs brownish white, the tarsi banded with black; abdomen white tinged with brown. Fore wing whitish tinged with rufous and thickly irrorated and suffused with fuscous, leaving the costal area to median nervure and postmedial line pale rufous; subbasal line represented by a slight striga from costa, the antemedial line by two points on costa and slight marks on median nervure and vein 1; claviform a small undefined pale rufous spot;

orbicular and reniform moderate, faintly defined by black, the former rather elongate elliptical, the latter with a slight fuscous mark in lower part; postmedial line with two fuscous points at costa, then very indistinct and slightly defined by whitish on outer side, bent outwards below costa, strongly excurved to vein 4, then incurved to below reniform and minutely dentate; the veins of terminal area streaked with black; subterminal line represented by some minute whitish lunules with slight dentate black marks on inner side and faint dark streaks beyond them in the interspaces; a terminal series of minute black lunules; cilia chequered ochreous white and fuscous. Hind wing white with a faint brown tinge; the veins darker; the terminal area suffused with brown between veins 7 and 2; cilia white with a slight brown line near base; the underside white with slight brown irroration on costal and terminal areas; a slight discoidal lunule.

Hab. U.S.A., Arizona, Jerome (*Oslar*), 3 ♂, 1 ♀ co-type. *Exp.* 30–32 millim.

2281. Oncocnemis augusta. (Plate C. fig. 1.)

Oncocnemis augustus, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 73, pl. 3. f. 5 (1875); Smith, Cat. Noct. N. Am. p. 159.

Head and tegulæ whitish tinged with rufous; sides of palpi and frons with some black scales; tegulæ with black line near base and rufous tips; thorax rufous mixed with fuscous; pectus and legs white; abdomen white dorsally tinged with brown and irrorated with fuscous. Fore wing pale rufous irrorated with black, the medial and terminal areas slightly suffused with fuscous; subbasal line represented by black striæ from costa and cell; antemedial line waved; claviform large, pale rufous defined by black; orbicular and reniform with rufous centres and ochreous annuli defined by black, the former round; a diffused waved medial line forming a black patch between the stigmata; postmedial line bent outwards below costa, then dentate, obliquely incurved below vein 4; subterminal line formed of dentate whitish marks defined on inner side by dentate black marks; a terminal series of small black lunules defined by whitish on inner side; cilia white mixed with fuscous at tips. Hind wing white with diffused brown subterminal band and fine brown terminal line; the underside with small discoidal spot and slight curved postmedial line, obsolete on inner area.

Hab. U.S.A., Texas, 1 ♂ type, Colorado (*Bruce*), 1 ♂, Berkeley (*Oslar*), 3 ♂, California, 1 ♀, Arizona, Maricopa Co., Phœnix (*Kunzé*), 7 ♂, 4 ♀. *Exp.* 34–36 millim.

*2282. Oncocnemis flagrantis. (Plate C. fig. 2.)

Oncocnemis flagrantis, Smith, Ins. Life, v. p. 330, f. 9 (1893); Dyar, Cat Lep. N. Am. p. 127.

♂. Head and thorax grey-white slightly mixed with brown;

tarsi brown ringed with white; abdomen grey-white tinged with brown. Fore wing grey-white thickly irrorated with black-brown scales except on terminal area; subbasal line represented by two points on costa; antemedial line very ill-defined, oblique from costa to median nervure, then waved and with traces of another line before it from cell to inner margin; orbicular and reniform whitish, ill-defined, the former moderate, round, with dark spot in centre, the latter large, somewhat quadrate; postmedial line very indistinct, waved, bent outwards below costa, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line represented by the irregular outline of the dark and pale areas, angled outwards at vein 7 and middle and inwards at discal and submedian folds; a terminal series of black points; cilia whitish mixed with brown. Hind wing whitish tinged with brown; a slight dark spot on vein 1 near tornus.

Hab. U.S.A., California, Arizona, Argus Mts., type † in U.S. Nat. Mus. *Exp.* 26 millim.

2283. Oncocnemis glennyi. (Plate C. fig. 3.)

Oncocnemis glennyi, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 141, pl. 4. f. 17 (1873); Smith, Cat. Noct. N. Am. p. 160.

♂. Head and thorax reddish brown mixed with some grey; tegulæ irrorated with black; tarsi banded with black; abdomen grey-brown irrorated with fuscous, the anal tuft tinged with rufous. Fore wing pale reddish brown thickly irrorated with fuscous; subbasal line black, from costa to submedian fold; antemedial line dentate, somewhat oblique; claviform moderate, slightly defined by black; orbicular and reniform large, defined by black at sides, the former round; traces of a waved medial line with more distinct spot at costa; postmedial line double at costa, then single, bent outwards below costa, then dentate, excurved to vein 4, then strongly incurved, some grey and black points beyond it on costa; subterminal line represented by a series of small dentate grey marks defined on inner side by small dentate black marks, somewhat angled outwards at veins 7, 4, 3; a terminal series of small black lunules; a fine pale line at base of cilia. Hind wing whitish suffused with brown, the veins and terminal area broadly brown; cilia brownish white with a brown line through them; the underside paler, irrorated with brown; a small discoidal lunule and postmedial series of short black streaks on the veins.

Hab. U.S.A., Colorado, 1 ♂ type, Denver. *Exp.* 40 millim.

2284. Oncocnemis riparia. (Plate C. fig. 4.)

Oncocnemis riparia, Morr. Can. Ent. vii. p. 213 (1875); Smith, Cat. Noct. N. Am. p. 161.

Head, thorax, and abdomen whitish tinged with pale rufous; tegulæ with black line near base and slight brown line near tips;

tarsi banded with black. Fore wing whitish suffused with pale rufous and irrorated with a few blackish scales; subbasal line indicated by faint striæ from costa and cell, the antemedial line by a slight dark point on costa; claviform very indistinct, whitish defined by a few dark scales, narrow; orbicular and reniform small, with whitish annuli defined by a few black scales, the former elongate; postmedial line very indistinct and defined by whitish on outer side, strongly bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of minute white streaks with faint dark streaks before them at middle; a terminal series of black points. Hind wing whitish tinged with brownish ochreous, the terminal area suffused with brown; cilia white with a brown line through them; the underside with slight brown discoidal spot and postmedial series of points on the veins.

Hab. U.S.A., Massachusetts, New York, Long Is., 1 ♂ type, Isle of Shoals, Evans Centre (*Grote*), 1 ♀, Buffalo. *Exp.* 38 millim.

2285. Oncocnemis cibalis. (Plate C. fig. 5.)

Oncocnemis cibalis, Grote, Can. Ent. xii. p. 244 (1880); Smith, Cat. Noct. N. Am. p. 162.

♂. Head and thorax white mixed with black scales; tegulæ white with slight blackish line towards tips which are rufous; tarsi ringed with black; abdomen white tinged with brown. Fore wing white irrorated with black, especially on costal and terminal areas, the veins streaked with black, the cell and interspaces of postmedial area white; a slight black streak in base of cell; a very slight black streak below the cell confluent with the claviform which is white defined by black, elongate and rather acute at extremity; antemedial line represented by an oblique black striga from costa; a slight black streak in middle of cell; orbicular absent; reniform represented by a slight dark mark on lower part of discocellulars; medial and postmedial lines represented by oblique black striæ from costa; the costa blackish on postmedial area; subterminal line represented by an oblique series of small dentate white marks from below apex to vein 2, defined by brown on inner side and with dentate black marks before it below veins 4, 3; a fine slightly waved black terminal line; cilia white with two blackish lines through them and blackish tips. Hind wing white; the veins brownish; the terminal area suffused with brown; cilia white with two slight brown lines through them; the underside with the costal and terminal areas slightly irrorated with brown; a small discoidal lunule; some fuscous suffusion before termen between veins 4 and 2.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♂. *Exp.* 40 millim.

Subsp. 1. Thorax and fore wing greyer, the latter more uniform and without the whitish patches in interspaces; the dentate black marks before subterminal line more developed between veins 6 and 2; tegulæ produced to a dorsal ridge.

Hab. Canada, Alberta, Calgary (*Wolley Dod*), 2 ♂. *Exp.* 36 millim.

*2286. Oncocnemis melalutea. (Plate C. fig. 6.)

Oncocnemis melalutea, Smith, J. N.Y. Ent. Soc. vii. p. 39 (1889); Dyar, Cat. Lep. N. Am. p. 126.

♀. Head and thorax yellowish irrorated with grey and black; frons blackish: tegulæ with black line at base and white line just before tips which are grey; patagia marked with grey scales. Fore wing yellowish irrorated with black and grey, especially on basal and terminal areas; subbasal line double, from costa to submedian fold; antemedial line double, blackish, oblique, hardly waved; claviform small, defined by a few fuscous scales; orbicular round, pale defined by fuscous; reniform pale slightly defined by fuscous and with fuscous lunule in centre; medial line represented by a slight shade at costa; postmedial line double, black-brown, bent outwards below costa, excurved to vein 4, then incurved, the area beyond the outer line dark with a series of white points on the veins; subterminal line represented by a series of very irregularly-placed white points; a terminal series of black striæ; cilia yellowish intersected with fuscous. Hind wing glossy yellowish white, the terminal area broadly black; traces of a dark postmedial line; cilia white; the underside whitish with postmedial dark line and broad terminal fuscous band.

Hab. U.S.A., Colorado, Fort Hills near Denver. *Exp.* 30 millim. This species is unknown to me; figured from drawing from type in U.S. Nat. Mus.

*2287. Oncocnemis extremis.

Oncocnemis extremis, Smith, Ent. Am. vi. p. 30 (1890); id. Cat. Lep. N. Am. p. 160.

♀. Head and thorax pale grey irrorated with black, the head tinged with cream-colour, the back of head and 1st joint of palpi dark brown. Fore wing pale grey to just beyond postmedial line, the terminal area fuscous black with a brown gloss; subbasal line single, black; antemedial line strong, black, evenly excurved; stigmata absent; a broad diffused medial shade, approximated to the postmedial line below the cell; postmedial line single, black, bent outwards below costa, then irregular, excurved to vein 4 and then oblique; subterminal line absent. Hind wing white, slightly tinged with yellowish, the base suffused with black; a broad terminal black band narrowing to a point at tornus; a slight postmedial line, not reaching inner margin; the underside whitish with dark irroration, the markings indistinct.

Hab. Canada, N.W. Br. Columbia. *Exp.* 33 millim. This species is unknown to me.

2288. Oncocnemis chorda. (Plate C. fig. 7.)

Homohadena chorda, Grote, Can. Ent. xii. p. 256 (1880); Smith, Cat. Noct. N. Am. p. 157.
Oncocnemis refecta, Smith, Trans. Am. Ent. Soc. xxi. p. 65, pl. vi. f. 11 (1894); Dyar, Cat. Lep. N. Am. p. 127.

♂. Base of palpi black; palpi and frons white; vertex of head black in front, pale rufous behind; thorax pale rufous and whitish with a few large black scales; tarsi banded with black; abdomen whitish tinged with brown and irrorated with fuscous. Fore wing whitish suffused with reddish brown and irrorated with black, the outer part of medial area except towards costa whiter, the terminal area darker; subbasal line represented by black striæ from costa and cell; antemedial line strong, black, obliquely excurved and slightly waved; claviform faintly defined by a few black scales; medial line represented by a black spot on costa; orbicular and reniform absent; postmedial line black defined by whitish on outer side, excurved from costa to vein 4, then somewhat oblique and minutely waved; subterminal line represented by a diffused blackish shade, excurved below costa and incurved below vein 3; a terminal series of small black lunules; cilia white and dark brown. Hind wing white, the veins irrorated with black, the terminal area fuscous, narrowing to tornus; cilia white with a fuscous line through them; the underside with the costal area irrorated with brown, a postmedial series of black points on the veins.

Hab. U.S.A., Colorado, 1 ♂ type, California, Sierra Nevada. *Exp.* 30 millim.

*2289. Oncocnemis rosea. (Plate C. fig. 8.)

Oncocnemis rosea, Smith, J. N.Y. Ent. Soc. xi. p. 11 (1903).

♂. Head and tegulæ rufous, the latter tipped with whitish; thorax whitish mixed with pale rufous; tarsi rufous with dark bands; abdomen whitish tinged with rufous. Fore wing whitish, mostly suffused and irrorated with pale rufous; subbasal line represented by a small black spot below costa with a dark striga from it; a strong rather diffused black antemedial line, slightly excurved and rather oblique; orbicular and reniform whitish, ill-defined, the former round; medial line represented by a small blackish spot on costa and an indistinct waved line from lower angle of cell to inner margin; postmedial line brown slightly defined by whitish on outer side and with darker mark at costa, minutely dentate, excurved from costa to vein 4, then incurved; subterminal line indistinct, whitish, minutely dentate, defined on inner side by small faint dentate brown marks, excurved below vein 7 and at middle; a terminal series of slight brown striæ; cilia pale rufous, whitish at base and intersected with whitish. Hind wing white; the veins brownish; terminal area suffused with brown, narrowing to tornus;

cilia brownish, white at base; the underside with the costal area and termen irrorated with pale rufous.

Hab. U.S.A., Colorado desert, co-type †♂ in Coll. J. B. Smith. *Exp.* 34 millim.

*2290. Oncocnemis simplicia. (Plate C. fig. 9.)

Oncocnemis simplicia, Smith, J. N.Y. Ent. Soc. xi. p. 12 (1903).

♂. Head deep chestnut-brown; thorax rufous mixed with ochreous; abdomen ochreous white. Fore wing greyish ochreous irrorated with rufous; subbasal line single, black, from costa to submedian fold, in which it is connected with the antemedial line by a slight black streak; antemedial line single, strong, black, oblique; claviform absent; orbicular with pale annulus, elongate elliptical; reniform narrow with pale annulus slightly defined by dark scales, its centre tinged with brown; postmedial line with fuscous spot at costa, then almost obsolete, bent outwards below costa, excurved to vein 4, then incurved, below vein 2 single, black, slightly angled outwards on vein 1; subterminal line represented by some irregularly-placed pale scales; a terminal series of black points. Hind wing semihyaline white slightly tinged with yellowish, the termen rather darker; the underside yellowish white, the costal area with some dark irroration, an interrupted postmedial line.

Hab. U.S.A., Colorado desert. *Exp.* 32 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2291. Oncocnemis punctilinea, n. sp. (Plate C. fig. 10.)

♀. Head and thorax whitish mixed with pale rufous and black; tegulæ with diffused black line near base; tarsi banded black and white; the claw on fore tibia small; abdomen white tinged with brown. Fore wing whitish suffused with red-brown and thickly irrorated with black, the veins with slight dark streaks; subbasal line represented by faint dark marks at costa and cell; antemedial line somewhat diffused and rather punctiform, oblique from costa to median nervure, slightly angled inwards in submedian fold, then oblique to inner margin; claviform absent; orbicular and reniform very small with faint undefined whitish annuli, the former round, the latter with blackish centre; postmedial line bent outwards below costa, then minutely waved and rather punctiform, excurved to vein 4, then very obliquely incurved; subterminal line very indistinct, diffused, whitish, somewhat angled outwards at vein 7 and incurved below vein 4; a terminal series of small black lunules. Hind wing whitish tinged with reddish brown, the terminal area somewhat darker; a slight dark terminal line; cilia white; the underside white, the costal and terminal areas irrorated with brown,

a small discoidal spot, and somewhat diffused slightly curved postmedial line.

Hab. U.S.A., Arizona, Jerome (*Oslar*), 1 ♀ type. *Exp.* 32 millim.

*2292. Oncocnemis baceri. (Plate C. fig. 11.)

Oncocnemis bakeri, Dyar, J. N.Y. Ent. Soc. xiii. p. 211 (1905).

Head brown; tegulæ grey, whitish at tips; thorax dark grey; abdomen paler. Fore wing grey with darker irroration, the terminal area browner; subbasal line slight, black; antemedial line single, black, somewhat expanding at costa, then slightly excurved; claviform slightly defined; orbicular and reniform with whitish annuli defined by black, their centres faintly tinged with brown; postmedial line single, black, bent outwards below costa, excurved to vein 4, then oblique; subterminal line absent. Hind wing semihyaline white, the veins of terminal area and the termen tinged with fuscous.

Hab. U.S.A., Nevada, Ormsby Co. *Exp.* 28–32 millim. This species is unknown to me; figured from a drawing from type in U.S. Nat. Mus.

2293. Oncocnemis homogena. (Plate C. fig. 12.)

Oncocnemis homogena, Grote, Bull. Geol. Geog. Surv. Terr. iii. p. 800 (1874); Smith, Cat. Noct. N. Am. p. 160.

♂. Head, thorax, and abdomen grey-white mixed with brown and fuscous; tegulæ tinged with rufous, with some diffused black at base and slight medial line; tarsi banded with black. Fore wing grey-white mixed with reddish brown and fuscous, the medial and terminal areas suffused with brown; subbasal line black, from costa to submedian fold; antemedial line black, rather diffused, with black spot at costa, slightly bent outwards below costa, then obliquely curved, expanding into a black mark representing the claviform; orbicular and reniform moderate, brownish grey defined by black, the former rather elongate elliptical; traces of an irregular diffused medial shade; postmedial line forming a black spot at costa, slightly bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved to below end of cell, some white points beyond it on costa; subterminal line only defined by diffused fuscous on its inner side, irregularly dentate, angled outwards at vein 7 and middle and inwards at discal and submedian folds; a terminal series of small black lunules; cilia chequered brownish grey and fuscous. Hind wing whitish slightly tinged with brown, the terminal area suffused with fuscous; cilia white with a dark line at base; the underside with the costal area irrorated with fuscous, a small discoidal lunule, and traces of sinuous postmedial line.

Hab. U.S.A., Colorado, Manitou (*Osten Sacken*), 1 ♂ type. *Exp.* 40 millim.

*2294. Oncocnemis pchono. (Plate C. fig. 13.)

Oncocnemis pchono, Smith, J. N.Y. Ent. Soc. vii. p. 38 (1899); Dyar, Cat. Lep. N. Am. p. 126.

♂. Head and thorax fuscous black irrorated with a few white scales. Fore wing fuscous black; subbasal line double, black with a few white scales in middle; antemedial line single, defined on inner side by a few white scales, somewhat oblique, excurved in interspaces; claviform absent; orbicular very small, round, slightly defined by black; reniform a narrow lunule defined by white scales; postmedial line single, black defined by white scales on outer side, bent outwards below costa, excurved to vein 4, then slightly incurved and with black points beyond it on the veins; subterminal line irregularly diffused towards inner margin; a terminal series of slight black lunules. Hind wing pale at base, tinged with fuscous towards termen; cilia with a pale line at base and white tips; the underside whitish at base, then grey with some dark irroration, a dark discoidal spot.

Hab. U.S.A., California, High Sierras. *Exp.* 32 millim. This species is unknown to me; figured from a drawing from type in U.S. Nat. Mus.

2295. Oncocnemis umbrifascia. (Plate C. fig. 14.)

Oncocnemis umbrifascia, Smith, Trans. Am. Ent. Soc. xxi. p. 64 (1894); Dyar, Cat. Lep. N. Am. p. 125.

♂. Head blackish in front, grey behind; thorax grey-white irrorated with brown; abdomen pale grey with an ochreous tinge and some brown irroration. Fore wing grey-white irrorated with large brown scales; medial area black-brown irrorated by grey towards costa and bounded by the ante- and postmedial lines, which are white, the former angled outwards below costa and incurved below cell, the latter strongly excurved between veins 6 and 4, then incurved to lower edge of reniform and sinuous to inner margin; orbicular and reniform small, defined by white, the former indistinct, round; terminal area slightly suffused with brown; traces of a terminal series of black points; a fine white line at base of cilia. Hind wing white with a slight brown tinge, the veins and terminal area irrorated with brown; cilia white with a slight brown line at base; the underside with the costal area irrorated with brown, a postmedial series of slight streaks on the veins and fine terminal line.

Hab. U.S.A., Colorado (*Bruce*), 1 ♂. *Exp.* 32 millim.

2296. Oncocnemis atrifasciata. (Plate C. fig. 15.)

Metahadena atrifasciata, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 431; Smith, Cat. Noct. N. Am. p. 159.

Head, thorax, and abdomen black-brown slightly mixed with grey; pectus and legs greyer, the tarsi ringed with white, the anal tuft rufous. Fore wing grey irrorated with dark brown and black,

the medial area deep black, the terminal area suffused with blackish; subbasal line curved, black, from costa to submedian fold, with a slight black streak beyond it in cell; antemedial line obliquely excurved; stigmata absent; medial line bounding on outer side the black area, excurved at middle and slightly angled inwards at discal and submedian folds, then oblique to inner margin, defined by whitish on outer side; the interspaces of terminal half streaked with black; postmedial line absent; subterminal line faintly defined by darker suffusion on inner side, slightly angled outwards at veins 7 and 4, then incurved. Hind wing pure white, the inner margin tinged with brown, the terminal half fuscous black, narrowing somewhat to inner margin; cilia fuscous, whitish at tips and towards tornus; the underside with the costal area suffused and irrorated with fuscous.

Hab. Canada, Nova Scotia, Halifax, 1 ♀; U.S.A., Maine, New York, Lewis Co. (*W. W. Hill*), 2 ♂, 1 ♀ type, Adirondack Mts. *Exp.* 38–42 millim.

*2297. **Oncocnemis barnesi.** (Plate C. fig. 16.)

Oncocnemis barnesii, Smith, J. N.Y. Ent. Soc. vii. p. 37 (1899); Dyar, Cat. Lep. N. Am. p. 126.

♀. Head and tegulæ rich sienna-brown; thorax whitish and grey mixed, darker posteriorly. Abdomen grey. Fore wing grey to postmedial line, then brownish; subbasal line black, from costa to submedian fold; antemedial line strong, black, rather oblique; stigmata absent; postmedial line strong, black, slightly excurved from costa to vein 4, then rather oblique; the veins of terminal area irrorated with black and the interspaces streaked with black; a black terminal line; a fine pale line at base of cilia. Hind wing whitish at base, shading to blackish at termen; cilia white; the underside whitish with slight dark irroration.

Hab. U.S.A., Wyoming, Yellowstone Park. *Exp.* 37 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

2298. **Oncocnemis figurata.** (Plate C. fig. 17.)

Homohadena figurata, Harv. Can. Ent. vii. p. 117 (1875); Smith, Cat. Noct. N. Am. p. 157.

♀. Head, thorax, and abdomen grey mixed with brown. Fore wing grey-white thickly and evenly irrorated with brown and black; subbasal line represented by an oblique black striga from costa; antemedial line single, black, oblique at costa, then excurved, connected by a black streak in submedian fold with postmedial line; stigmata absent; a black streak in discal fold from before end of cell to termen; postmedial line single, black, oblique from costa to vein 6, excurved to vein 4, then strongly incurved to below end of cell; a series of black streaks in interspaces of terminal area; cilia with fine pale line at base. Hind wing pale, almost uniformly

suffused with reddish brown; cilia white with brown line near base; the underside whitish, the costal and terminal areas irrorated and suffused with brown, a small discoidal spot and curved postmedial line.

Fore tibia with large claw on inner side and small claw on outer.

Hab. U.S.A., Colorado, Glenwood Springs, Nevada, 1 ♀ type. *Exp.* 32 millim.

2299. Oncocnemis major. (Plate C. fig. 18.)

Oncocnemis major, Grote, Papilio, i. p. 33 (1881); Smith, Cat. Noct. N. Am. p. 162.
Oncocnemis aqualis, Grote, Papilio, i. p. 33 (1881).
Oncocnemis curvicollis, Grote, Can. Ent. xv. p. 10 (1883).

♀. Head and thorax grey mixed with brown; tegulæ with black line near base and brown tips; tarsi banded with black; abdomen whitish irrorated with brown. Fore wing pale grey thickly irrorated with brown; subbasal line represented by an oblique striga from costa, the antemedial line by an oblique striga from costa and points on the veins and in submedian fold; a slight dark streak below base of cell to the claviform, which is whitish defined by brown, elongate and acute at extremity; orbicular and reniform faintly defined by brown, the former elongate and nearly confluent in discal fold with the latter; a slight brown medial shade; postmedial line very indistinct, bent outwards below costa, then represented by a series of minute streaks on the veins; the veins of terminal area streaked with black, interrupted by slight white points representing the subterminal line; cilia whitish and brown. Hind wing whitish, the costal, inner, and terminal areas broadly suffused with brown; the veins brown; cilia white with a brown line near base; the underside whiter, the costal and terminal areas irrorated with brown, a small discoidal spot and postmedial series of minute streaks on the veins.

Ab. 1. *aqualis*. Rather whiter.

Hab. U.S.A., Colorado, 1 ♀ type, Salidah, California, 1 ♀ type *aqualis*, Arizona. *Exp.* 38–42 millim.

*2300. Oncocnemis ciliata. (Plate C. fig. 19.)

Oncocnemis ciliata, Smith, Proc. U.S. Nat. Mus. xxii. p. 478 (1900); Dyar, Cat. Lep. N. Am. p. 126.

♀. Head and thorax grey-white irrorated with fuscous and black scales; tegulæ with a fuscous line; abdomen ochreous white. Fore wing grey-white irrorated with fuscous, the costal half of medial area darkest, the veins with slight dark streaks, the lines absent; a black streak defined on each side by white below base of cell, confluent with the narrow elongate claviform; orbicular with fuscous centre and white annulus, narrow, elongate, acute towards base; reniform a small narrow lunule with white annulus and dark centre irrorated with grey; the terminal area with a series of black

and grey streaks in the interspaces, a slight oblique dark shade from apex and another from tornus. Hind wing pale fuscous with a slight reddish tinge, the basal area paler; the underside grey with dark irroration and a small discoidal spot.

Hab. U.S.A., Colorado desert. *Exp.* 22–25 millim. This species is unknown to me; figured from drawing from type in Coll. J. B. Smith.

2301. **Oncocnemis poliochroa**, n. sp. (Plate C. fig. 20.)

Head and thorax grey slightly tinged with ochreous and mixed with black; frons with black bar; tegulæ with black lines near base, at middle, and near tips; tarsi banded with black; abdomen pale ochreous tinged with brown. Fore wing grey slightly tinged with ochreous and thickly irrorated with black; a black streak in base of cell and small subbasal black spots below costa and cell; antemedial line obsolescent, with black spot at costa and another on its inner side below the cell, angled outwards just above vein 1; claviform whitish irrorated with black and defined by black, elongate, acute at extremity; orbicular and reniform moderate defined by black, the former elongate elliptical and confluent with the latter at middle; a sinuous brown medial line, oblique and blackish at costa; postmedial line with black spot at costa, oblique to vein 6, then minutely dentate, below vein 4 incurved to lower edge of reniform, then oblique, some pale points beyond it on costa; the veins of terminal half slightly streaked with black; subterminal line formed of small whitish dentate marks with wedge-shaped black marks before them and short black streaks beyond them; a terminal series of small black lunules; cilia whitish mixed with fuscous and intersected with fuscous. Hind wing whitish tinged with ochreous; the veins dark; the terminal area fuscous, broad at costa, narrowing to a point at tornus; the underside with the costal area white irrorated with black, a small discoidal lunule showing through to upperside and postmedial series of short streaks on the veins.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 5 ♂, 1 ♀ type. *Exp.* 36 millim.

2302 **Oncocnemis colorado.** (Plate C. fig. 21.)

Oncocnemis colorado, Smith, Ent. News. Philad. iv. p. 100, pl. vi. f. 5 (1893); id. Cat. Noct. N. Am. p. 161.

♂. Head and thorax white slightly mixed with brown and fuscous; frons with black bar; tegulæ with black line near base and black tips; tarsi banded with black; abdomen whitish suffused with pale rufous. Fore wing whitish suffused and irrorated with reddish brown; subbasal line represented by a black point below costa, the antemedial line by an oblique striga from costa; a short fine black streak in base of cell; a strong black streak below the cell to the claviform, which is white, elongate, defined by black and with slight dark streak in centre, acute at extremity and

touching postmedial line; orbicular and reniform white defined by black and with blackish centres, the former elongate and confluent in discal fold with the latter which is small; medial line represented by a slight dark striga from costa; postmedial line oblique from costa to vein 6, where it is angled, then very oblique inwardly and minutely dentate; the veins of terminal area slightly streaked with black; subterminal line represented by a series of slight dentate white marks with wedge-shaped black streaks before them and black streaks beyond them; cilia white mixed with pale brown and with brown line through them. Hind wing white tinged with brown, the terminal area suffused with brown except towards tornus; cilia white with a brown line near base; the underside white irrorated with brown, a small discoidal spot showing through to upperside and traces of a postmedial line.

Hab. U.S.A., Glenwood Springs (*Barnes*), 2 ♂. *Exp.* 36–38 millim.

2303. Oncocnemis chandleri. (Plate C. fig. 23.)

Oncocnemis chandleri, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 107, pl. 3. f. 9 (1873); Smith, Cat. Noct. N. Am. p. 161.

♂. Head and thorax whitish tinged with brown and mixed with fuscous; a blackish bar between antennæ; tegulæ black at base and with blackish tips; abdomen ochreous white tinged with brown. Fore wing grey-white tinged with brown and thickly irrorated with fuscous; subbasal line absent; antemedial line represented by a black spot on costa; a black streak below base of cell to the claviform, which is whitish defined by black and with blackish streak in centre, elongate and extending to or with black streak from its extremity to the postmedial line; orbicular and reniform whitish defined by black, the former very elongate with blackish streak in centre, confluent or almost confluent with the latter, which is ill-defined and with blackish centre; postmedial line indistinct, with blackish spot on costa, oblique to vein 6, then dentate and very oblique to inner margin; the veins of terminal half slightly streaked with black; subterminal line represented by slight dentate whitish marks with wedge-shaped black streaks before them and black streaks beyond them; a fine waved terminal line; cilia whitish, tinged with fuscous and with fine pale line at base. Hind wing whitish tinged and irrorated with brown, the terminal area darker; cilia white with a slight dark line through them; the underside whiter irrorated with fuscous, a small discoidal spot and indistinct curved postmedial line, the area beyond it darker.

Hab. U.S.A., Colorado (*Meade*), 2 ♂ type. *Exp.* 34 millim.

2304. Oncocnemis extranea. (Plate C. fig. 22.)

Oncocnemis extranea, Smith, Trans. Am. Ent. Soc. xvii. p. 68, pl. 1 row a. f. 4 (1891); Dyar, Cat. Lep. N. Am. p. 127.

♀. Head and thorax whitish mixed with brown; vertex of

head with black bars in front and behind; tegulæ with black line near base and brownish line near tips; tarsi fuscous with pale rings; abdomen ochreous brown irrorated with fuscous. Fore wing grey-white tinged with brown and thickly irrorated with fuscous; subbasal and antemedial lines absent; a strong black streak below base of cell confluent with the claviform, which is elongate, white defined by black and with dark streak in centre, extending to the postmedial line; orbicular very elongate, confluent with the small reniform, white defined by black, with strong black streak in centre confluent with the black centre of reniform; postmedial line hardly traceable, bent outwards below costa, then very oblique and waved, and with two slight black streaks before it beyond the cell; a series of black streaks in the interspaces of terminal area between vein 7 and submedian fold, the streak above vein 4 extending to the cell and those above 5 and 3 defined by white above; a terminal series of slight black lunules; cilia mixed fuscous and white. Hind wing whitish tinged with brown; the veins brown; the terminal area broadly suffused with brown; cilia white with a brown line through them; the underside irrorated with brown, especially on costal area, a discoidal point, the terminal area suffused with fuscous.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 1 ♂. *Exp.* 34 millim.

2305. Oncocnemis tetrops. (Plate C. fig. 24.)

Oncocnemis tetrops, Dyar, Proc. Ent. Soc. Wash. vi. p. 64 (1904).

Head and thorax ochreous white; a blackish bar between antennæ; tegulæ blackish at base; patagia with blackish outer edge; tarsi with fuscous bands; abdomen ochreous white tinged with brown. Fore wing grey-white tinged with brown and thickly irrorated with fuscous; a short black streak below base of costa, a slight black streak in base of cell and a black streak below the cell, somewhat broken up into two small spots at middle and confluent with the linear claviform; antemedial line represented by a small black spot on costa; orbicular and reniform represented by small black spots connected by a streak at middle; postmedial line represented by an oblique series of short indistinct black streaks on the veins from vein 6 to inner margin; the veins of terminal half slightly streaked with black; terminal area somewhat darker, the subterminal line absent; traces of dark streaks in interspaces of terminal area; a terminal series of slight black lunules; cilia chequered white and fuscous. Hind wing white, the veins and terminal area slightly tinged with brown; a dark terminal line; cilia white with a slight dark line through them towards apex; the underside white, the costal area slightly irrorated with fuscous, a small discoidal spot and postmedial series of minute streaks on the veins.

Hab. U.S.A., Arizona, Jerome (*Oslar*), 2 ♂, 1 ♀ co-type. *Exp.* 32–34 millim.

*2306. Oncocnemis griseicollis. (Plate C. fig. 32.)

Oncocnemis griseicollis, Grote, Can. Ent. xiv. p. 19 (1882); Smith, Cat. Noct. N. Am. p. 163.

Head black; thorax whitish grey; abdomen whitish. Fore wing whitish sparsely irrorated with black, the markings very indistinct; subbasal line absent; antemedial line faint, fine, blackish, erect; claviform slight; orbicular and reniform slightly defined by black, the former round, the latter constricted at middle, with a blackish streak from it to termen; postmedial line hardly traceable; terminal area with slight dark streaks. Hind wing whitish and semihyaline.

Hab. U.S.A., Arizona. *Exp.* 25 millim. This species is unknown to me, figured from drawing from specimen in U.S. Nat. Mus.

2307. Oncocnemis nigrocaput. (Plate C. fig. 25.)

Oncocnemis nigrocaput, Smith. Trans. Am. Ent. Soc. xxi. p. 67 (1894); Dyar, Cat. Lep. N. Am. p. 127.

♂. Head, thorax, and abdomen ochreous white, 3rd joint of palpi, frons, and antennæ black; tegulæ with slight black line near base; fore and mid tibiæ blackish above; tarsi banded with black. Fore wing ochreous white irrorated with pale brown; a minute black streak on base of median nervure; a black fascia below the cell to beyond middle, narrowing to extremity; a black fascia in discal fold from middle of cell to termen narrowing to extremities; slight black streaks in interspaces of terminal area; no traces of lines or stigmata. Hind wing white, the veins and termen slightly tinged with ochreous.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♂. *Exp.* 36 millim.

2308. Oncocnemis atricolaris. (Plate C. fig. 26.)

Homohadena atricollaris, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 273 (1874); Smith, Cat. Noct. N. Am. p. 162.

♂. Head and thorax fuscous brown; tegulæ deep black at base defined by white above, the tips with some white scales; abdomen pale ochreous brown. Fore wing whitish tinged with pale brown and thickly irrorated with dark brown; subbasal and antemedial lines represented by slight blackish marks on costa; a fine black streak below basal half of costa defined by white below; a diffused black fascia below the cell confluent with the claviform, which is elongate and defined by black; a black streak in lower end of cell; orbicular and reniform almost obsolete; postmedial line represented by a small black mark on costa and a rather indistinct incurved line from vein 4 to inner margin; a strong black streak below vein 5 from lower angle of cell to termen towards which it is finer; terminal area with a series of black streaks in the interspaces, longer above and below vein 6; subterminal line absent; cilia chequered brownish and black. Hind wing white, the veins

brownish; a fine brown terminal line; the underside with the costal area irrorated with brown.

Hab. U.S.A., Texas, Colorado, Arizona, 2 ♂ type, Prescott (*Kunzé*), 1 ♂. *Exp.* 30–34 millim.

Genus ECTOCHELA.

	Type.
Ectochela, Hmpsn. Ann. S. Afr. Mus. ii. p. 279 (1902)	*canina*.

Proboscis fully developed; palpi upturned, the 2nd joint broadly fringed with hair in front, the 3rd rather porrect; frons smooth; eyes large, rounded; antennæ of male minutely serrate and fasciculate; head and thorax clothed with hair and hair-like scales, the pro- and metathorax with spreading crests; fore tibia with curved claw on outer side at extremity; abdomen with some rough hair at base and without crests. Fore wing rather narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2309. Ectochela canina.

Acronycta canina, Feld. Reis. Nov. pl. 100. f. 10 (1874).

♂. White; head, thorax, and abdomen slightly irrorated with black; palpi blackish at sides; antennæ and tarsi blackish except at base. Fore wing sparsely irrorated with black and brown scales; the median nervure, veins 7, 6, 5, and bases of veins 4, 3, 2 sometimes streaked with black; a more or less prominent black streak below base of cell; an antemedial black striga from costa and short streak on vein 1; reniform represented by a small black annulus or lunule; postmedial line reduced to a series of rather

Fig. 48.—*Ectochela canina*, ♂. ½.

streak-like points on the veins, excurved from costa to vein 4, then oblique; a faint oblique streak from termen below apex with faint diffused subterminal line from it to inner margin; a terminal series of black points; cilia chequered fuscous and white. Hind wing white, the terminal area sometimes suffused with brown; a terminal series of black points except towards tornus; the underside with the costal and terminal areas slightly irrorated with fuscous, a minute discoidal point and traces of a postmedial series of points on the veins.

♀. Thorax darker; abdomen suffused with brown; fore wing

with a slight purplish tinge and largely suffused with black; a broad diffused black fascia below the cell, some black suffusion beyond the cell, postmedial line entire, subterminal oblique fascia and line prominent and diffused, the latter angled outwards at vein 4; hind wing tinged with brown, the terminal area strongly suffused with black.

Hab. Cape Colony, Calvinia Distr. (*Alston*), 1 ♂, Uitenhage (*Bainstow*), 1 ♂, Grahamstown (*Miss G. White*), 1 ♀. *Exp.*, ♂ 38, ♀ 44 millim.

Genus **HOMONCOCNEMIS**, nov.

Type, *H. fortis*.

Proboscis fully developed; palpi obliquely upturned, fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of female almost simple; head and thorax clothed with hair and hair-like scales and without crests; fore tibiæ with curved claw on outer side; abdomen with some rough hair at base but without crests. Fore wing with the apex somewhat rounded, the termen nearly evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

2310. Homoncocnemis fortis.

Homohadena fortis, Grote, Can. Ent. xii. p. 257 (1880); Smith, Cat. Noct. N. Am. p. 161.

Homohadena picina, Grote, Can. Ent. xii. p. 257 (1880).

Agrotis vorax, Behr. Papilio, iv. p. 21 (1884) (larva); Smith, Papilio, iv. p. 114.

♀. Head and thorax dark brown with a golden gloss; abdomen pale golden brown. Fore wing dark brown with a purplish gloss; subbasal line represented by faint dark points below costa and cell; antemedial line represented by slight black points on the veins; stigmata absent; postmedial line represented by a series of black

Fig. 49.—*Homoncocnemis fortis*, ♀. ½.

points on the veins, bent outwards below costa, incurved below vein 4 and angled outwards on vein 1; subterminal line absent; a fine pale line at base of cilia. Hind wing white, the veins and marginal areas suffused with golden brown; cilia white, brown at base; the underside with postmedial series of short black streaks on the veins showing through to upperside.

Hab. U.S.A., Nevada, California, Havilah, 1 ♀ type *picina*. *Exp.* 46 millim.

Larva. Behrens, Papilio, iv. p. 21.

Light brown or grey, emaciated, thin, ventral surface pale metallic greenish; two longitudinal series of black points. Food-plant, Ash.—H. G. D.

Genus **CERAPODA.**

Type.

Cerapoda, Smith, Trans. Am. Ent. Soc. xxi. p. 68 (1894) ..... *stylata.*

Proboscis fully developed; palpi oblique fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of male serrate and fasciculate or moniliform; head and thorax clothed chiefly with scales, the pro- and meta-thorax with slight speading crests; tarsi with long curved claw-like spines on outerside of 1st two joints; abdomen with dorsal crest at base only. Fore wing rather narrow, the apex somewhat produced, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male serrate and fasciculate; fore tibia with minute spine at extremity and evenly disposed claw-like spines on outer side of 1st joint of tarsus.

2311. Cerapoda oblita

Oncocnemis oblita, Grote, Bull. Geol. Geog. Surv. Terr. iii. p. 117 (1877); Smith, Cat. Noct. N. Am. p. 162.

Head and thorax grey-white mixed with fuscous brown; frons with blackish bar; tegulæ with slight blackish medial line; patagia with black line near upper edge; tarsi ringed with black towards extremity; abdomen pale brownish ochreous slightly irrorated with fuscous, the crest at base blackish. Fore wing grey-white tinged with ochreous and irrorated with fuscous, the veins with slight blackish streaks; a short white fascia in base of cell with fine dark

Fig. 50.—*Cerapoda oblita*, ♂. ½.

streak through it; a fine black streak below the cell continuous with the lower edge of claviform, which is slightly defined by black, elongate and acute at extremity; ante- and postmedial line absent; orbicular with brownish centre and white annulus defined by black, elongate and acute at extremities, nearly confluent with a short curved white streak on extremity of median nervure, emitting from middle a slight upward tooth on discocellulars forming part of the small very indistinct reniform and defined by black; the postmedial area

ochreous in discal and submedian folds; an oblique diffused whitish shade from apex; subterminal line represented by slight dentate blackish marks in the interspaces, arising from termen below apex, the mark below vein 4 defined by whitish above and below; a terminal series of slight black lunules; cilia chequered fuscous and white. Hind wing white slightly tinged with brown; the veins brown; the terminal area suffused with brown except towards tornus; cilia white with a slight dark line through them; the underside with the costal and terminal areas irrorated with brown.

Hab. U.S.A., Nevada, 1 ♀ type, California (*Walsingham*), 2 ♂, 1 ♀. *Exp.* 34 millim.

Sect. II. Antennæ of male moniliform; fore tibia without spine at extremity, the 1st joint of tarsus with two large curved claw-like spines at base and one at extremity.

2312. Cerapoda stylata.

Cerapoda stylata, Smith. Trans. Am. Ent. Soc. xxi. p. 69, pl. ii. f. 4 (1894); Dyar, Cat. Lep. N. Am. p. 128.

♀. Head and thorax white slightly tinged with ochreous and mixed with black; tarsi banded with black; abdomen white tinged with ochreous. Fore wing white thickly irrorated with fuscous brown, the terminal area suffused with fuscous; the veins of terminal area slightly streaked with black; a white streak in submedian fold to subterminal line; subbasal line represented by a slight striga from costa; antemedial line hardly traceable, oblique, irregular; orbicular and reniform small, white, slightly irrorated with fuscous and defined by black, the former oblique oblong, the latter irregular and with pale rufous streak beyond it in submedian fold; postmedial line almost obsolete, bent outwards below costa, then oblique and somewhat dentate; subterminal line white defined

Fig. 51.—*Cerapoda stylata*, ♀. ½.

by black on inner side, dentate, angled outwards to termen at veins 7, 4, 3; a series of slight black points at extremities of veins, cilia chequered white and fuscous. Hind wing white, the termen slightly irrorated with fuscous; the underside with the costal area irrorated with fuscous, a postmedial series of minute streaks on the veins.

Hab. U.S.A., Colorado, Nevada, 1 ♀. *Exp.* 40 millim.

Genus **COPITARSIA**, nov.

Type, *C. turbata.*

Proboscis fully developed; palpi upturned, the 2nd joint fringed with hair in front, the 3rd porrect; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and hair-like scales mixed with some scales, the pro- and metathorax with spreading crests; fore tarsi with curved claw-like spines on outer side of 1st joint; abdomen with dorsal crest on basal segment. Fore wing with the apex rectangular, the termen rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the antemedial line double.
  a. Fore wing rather long and narrow, the termen obliquely curved.
    a^1. Fore wing nearly uniform brown.
      a^2. Hind wing of male wholly whitish ..... *humilis.*
      b^2. Hind wing of male with the terminal area suffused with brown ..... *consueta.*
    b^1. Fore wing largely suffused with grey ..... *turbata.*
  b. Fore wing shorter and broader, the termen more erect..... *nænioides.*
B. Fore wing with the antemedial line single.
  a. Fore wing with the lines and stigmata defined by greyish. *patagonica.*
  b. Fore wing with the lines and stigmata not defined by greyish..... *purilinea.*

2313. **Copitarsia humilis.** (Plate C. fig. 27.)

Polia humilis, Blanch. Gay's Chile, Lep. p. 79, pl. vi. f. 7 (1854).

♂. Head and thorax pale rufous; tegulæ with slight dark medial line; tarsi brown with pale rings; abdomen ochreous white slightly tinged with fuscous. Fore wing ochreous white tinged with pale rufous and very slightly irrorated with fuscous; subbasal line represented by slight double striæ from costa and cell; antemedial line indistinct, double, waved; orbicular and reniform almost obsolete, pale faintly defined by brown, the former round; traces of a curved medial line; postmedial line with double dark points at costa, then very indistinct, bent outwards below costa, then dentate and produced to slight dark streaks on the veins, oblique below vein 4; subterminal line hardly traceable, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing semihyaline white, the veins tinged with ochreous.

♀. Hind wing with the terminal area suffused with ochreous brown.

Hab. Chili, Coquimbo (*J. J. Walker*), 1 ♂, Santiago. *Exp.* 34 millim.

2314. **Copitarsia consueta.** (Plate C. fig. 28.)

Agrotis consueta, Wlk. xi. 738 (1857).
Agrotis incommoda, Wlk. xxxii. 692 (1865).
Agrotis peruviana, Wlk. xxxii. 693 (1865).
Mamestra inducta, Druce, Biol. Centr.-Am., Het. i. p. 272 (nec Wlk.).

Head and thorax reddish brown slightly tinged with grey and

irrorated with a few black scales; frons with black bar; tegulæ with slight medial dark line; tarsi fuscous with pale rings; abdomen pale brown. Fore wing pale reddish brown slightly suffused with grey and irrorated with dark scales; subbasal line represented by double black striæ from costa and cell; antemedial line double, oblique, waved; claviform minute, defined by a few black scales; orbicular and reniform greyish, incompletely defined by black, the former round; a curved waved medial line; postmedial line defined by grey on outer side, double at costa, bent outwards below costa, then dentate and produced to slight streaks on the veins, incurved below vein 4; subterminal line whitish, slightly defined on each side by fuscous, angled outwards at vein 7 and somewhat dentate at veins 4, 3, a terminal series of small black lunules; cilia with a fine pale line at base. Hind wing whitish, the veins, costal, inner, and terminal areas suffused with reddish brown: cilia white with a brown line near base; the underside whiter, the costal area irrorated with brown, a slight discoidal lunule and indistinct curved postmedial line.

Hab. Mexico, Jalapa (*Hoege*, *Trujillo*), 1 ♂, 1 ♀, Mexico City (*Hoege*, *Godman*), 3 ♂, 1 ♀, Durango (*Becker*), 1 ♂, Patzcuaro (*Godman*), 1 ♀; Guatemala, Totonicapam (*Champion*), 1 ♀; Costa Rica, Irazu (*Rogers*), 2 ♂; Colombia, Bogota (*Stevens*), 2 ♂ type and type *incommoda*; Peru, 3 ♂, 1 ♀ type *peruviana*; Chili, Coquimbo (*J. J. Walker*), 2 ♂, 2 ♀, Mulchen (*Elwes*), 1 ♂; Argentina, Mendoza, Tunuyan R., 1 ♂. *Exp.* 36–46 millim.

2315. Copitarsia turbata.

Polia turbata, Herr.-Schäff. Eur. Schmett. ii. Noct. ff. 639–640 (1845).
Noctua heydenreichii, Frr. Neue Beitr., Schmett. vi. p. 139, pl. 569. f. 4 (1852).
Mamestra decolora, Guen. Noct. i. p. 190 (1852).
Mamestra inducta, Wlk. ix. 236 (1856).
Spælotis subsignata, Wlk. x. 371 (1856).
Agrotis hostilis, Wlk. xi. 737 (1857).
Graphiphora sobria, Wlk. xi. 744 (1857).

Head and thorax fuscous mixed with grey; frons with black bars at middle and above; tegulæ with black medial line; tarsi ringed with white; abdomen fuscous brown. Fore wing fuscous brown

Fig. 52.—*Copitarsia turbata*, ♂. ½.

largely suffused with grey and irrorated with dark scales; subbasal line represented by double black striæ from costa and cell; antemedial line double, waved, somewhat obliquo; claviform defined by

black at extremity; orbicular and reniform grey defined by black, the former round; a curved waved medial line; postmedial line double, oblique from costa to vein 6, then dentate and with slight black streaks beyond it on the veins, oblique below vein 4; subterminal line whitish defined on each side by fuscous and with slight dentate black marks on inner side, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia with a fine pale line at base. Hind wing whitish, the veins, costal, inner, and terminal areas suffused with brown; cilia white with a brown line near base; the underside whiter, the costal and terminal areas irrorated with brown, a small discoidal spot and curved postmedial line.

Hab. Colombia, Bogota (*Stevens*), 1 ♂, 1 ♀, types *subsignata* and *sobria*; Venezuela, 1 ♂, 5 ♀, types *inducta* and *hostilis*. *Exp.* 36–46 millim.

2316. Copitarsia næniodes. (Plate C. fig. 29.)

Anomogyna nænioides, Butl. Trans. Ent. Soc. 1882, p. 132.

♂. Head and thorax brown mixed with some black and grey; frons with black bar; tegulæ with black medial line; tarsi black ringed with white; abdomen greyish fuscous. Fore wing brown thickly suffused with greyish fuscous and irrorated with black; subbasal line double, waved, from costa to submedian fold; antemedial line double, waved, somewhat oblique; claviform moderate, defined by black; orbicular and reniform with fuscous centres and ochreous-brown annuli defined by black, the former round; traces of a waved medial line; postmedial line double at costa, bent outwards below costa, then dentate and produced to white points on the veins, incurved below vein 4, some pale points beyond it on costa, subterminal line represented by a series of small ochreous white points with slight dentate black marks before them at middle, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia with series of ochreous points at base. Hind wing white, the veins and terminal area tinged with fuscous; cilia white with a dark line through them except towards tornus; the underside with the costal area irrorated with brown, a slight discoidal lunule and postmedial series of minute streaks on the veins.

♀. Hind wing wholly brown; the underside grey-brown with dark irroration on costal area, a discoidal lunule and curved postmedial line.

Hab. Chili (*Reed*), 1 ♀ type, Mulchen (*Elwes*), 1 ♂, 2 ♀. *Exp.* 36 millim.

2317. Copitarsia patagonica, n. sp. (Plate C. fig. 30.)

Head and thorax reddish brown mixed with grey and fuscous; abdomen brownish ochreous mixed with fuscous. Fore wing

brownish ochreous suffused and irrorated with dark brown; subbasal line black defined by ochreous on outer side, waved, from costa to submedian fold; antemedial line defined by ochreous on inner side, waved, oblique; claviform dark brown indistinctly defined by blackish; orbicular and reniform small with ochreous annuli defined by blackish, the former round: postmedial line defined by ochreous on outer side, bent outwards below costa, then minutely dentate, angled inwards in discal fold and incurved below vein 4; subterminal line ochreous defined by obscure blackish dentate marks on inner side and with blackish patch before it at costa, slightly angled outwards at vein 7 and excurved at middle: a terminal series of slight black points; cilia ochreous intersected with brown. Hind wing pale ochreous suffused with brown, especially towards termen; cilia ochreous; the underside greyish with slight discoidal lunule and traces of curved postmedial line.

Hab. Patagonian Andes, Chubut, Valle Lago Blanco, 2 ♂ type. *Exp.* 32 millim.

*2318. Capitarsia purilinea. (Plate C. fig. 31.)

Orthosia purilinea, Mab. Bull. Soc. Philom. (7) ix. p. 62 (1885); id. N. Arch. Mus. (3) i. p. 152, pl. xi. f. 1 (1889).

♀. Head and thorax grey mixed with pale brown; abdomen brownish grey dorsally tinged with fuscous. Fore wing pale grey-brown with darker irroration; a waved dark subbasal line from costa to submedian fold; a waved antemedial line obtusely angled outwards below cell; a rather indistinct curved medial line; a waved postmedial line bent outwards below costa, slightly angled inwards at discal fold, strongly incurved below vein 4, and again slightly angled outwards at vein 1; subterminal line represented by a series of short dark streaks in the interspaces; a prominent terminal series of black points. Hind wing pale brown.

Hab. Patagonia, Santa Cruz, type † ♀ in Mus. Paris. *Exp.* 28 millim.

Genus **HOMOHADENA.**

Type.

Homohadena, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 180 (1873)... *badistriga*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front, the 3rd somewhat porrect; frons smooth; eyes large, rounded, slightly overhung by cilia; antennæ of male nearly simple; head and thorax clothed chiefly with scales and without crests; abdomen with some rough hair at base but without crests. Fore wing with the apex and termen rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle, 8 anastomosing with the cell near base only.

A. Fore wing with the ante- and postmedial lines present.
  a. Fore wing with black streak in base of submedian fold.
    a^1. Fore wing with black streak from reniform towards termen.

a^2. Hind wing white, the terminal area suffused with fuscous.
a^3. Fore wing suffused with rufous ..... *badistriga.*
b^3. Fore wing not suffused with rufous ..... *fifia.*
b^2. Hind wing wholly tinged with fuscous.
a^3. Fore wing with the postmedial line angled inwards in submedian fold to the antemedial line..... *retroversa.*
b^3. Fore wing with the ante- and postmedial lines connected by a black streak in submedian fold ... *infixa.*
b^1. Fore wing without black streak from reniform towards termen.
a^2. Fore wing with the black streak in submedian fold extending to the postmedial line ..... *induta.*
b^2. Fore wing with the black streak in submedian fold not extending beyond antemedial line.
a^3. Fore wing with the antemedial line angled outwards to the postmedial line in submedian fold... *loculosa.*
b^3. Fore wing with the antemedial line even, oblique . *deserta.*
b. Fore wing without black streak in base of submedian fold.
a^1. Fore wing with the subterminal line present.
a^2. Fore wing with blackish suffusion in cell between orbicular and reniform ..... *epipaschia.*
b^2. Fore wing without blackish suffusion in cell between orbicular and reniform ..... *coelei.*
b^1. Fore wing with the subterminal line absent.
a^2. Fore wing reddish brown mixed with whitish ..... *incomitata.*
b^2. Fore wing reddish brown irrorated with fuscous ..... *stabilis.*
B. Fore wing with the ante- and postmedial lines absent..... *inconstans.*

2319. Homohadena badistriga.

Hadena badistriga, Grote, Trans. Am. Ent. Soc. iv. p. 20 (1872); id. Check List, Noctuidæ, pl. 1. f. 5; Smith, Cat. Noct. N. Am. p. 158.

Head black-brown, ochreous white behind; tegulæ white with slight brown line near base and medial streak; thorax reddish brown mixed with white, black-brown in front and at sides; fore legs dark brown with white rings on tarsus; pectus and mid and hind legs whitish tinged with red-brown, the tarsal joints banded with black; abdomen white tinged with brown. Fore wing white suffused with cupreous brown and sparsely irrorated with fuscous;

Fig. 53.—*Homohadena badistriga*, ♂. ½.

subbasal line represented by a black striga from costa with a fine black streak from its lower extremity; a strong rather diffused black streak below the cell to well beyond antemedial line, which is black, very oblique from costa to subcostal nervure, excurved to median nervure, then slightly waved; a black streak in discal fold from antemedial line to termen, expanding into a spot on disco-

cellulars; postmedial line black, defined by white on outer side, strongly bent outwards below costa, excurved to vein 4, then very oblique to submedian fold, where it is angled inwards, then excurved to inner margin; a series of strong black streaks in the interspaces of terminal area defined by white above and below, those towards middle extending almost to postmedial line, ending in small terminal black lunules; cilia brownish at base, with strong fuscous medial line and chequered white and fuscous tips. Hind wing white faintly tinged with ochreous, the termen slightly suffused with brown, a dark terminal line; cilia white, brownish at base; the underside with the costal and terminal areas irrorated with brown, a slight discoidal point and traces of postmedial line on costal area.

Hab. Canada, 1 ♂, 1 ♀, Renfrew Co., 1 ♂; U.S.A., Maine to Texas and west to Kansas and Colorado. *Exp.* 32 millim.

Larva. Head rounded, wider than high, granular, light brown, the sides chequered, vertical curved band broad, especially at vertex. Body narrowed at the ends, light brown with darker brown lines. Shields concolorous and only slightly chitinized, a broad straight whitish dorsal line, brown-centered, edged by a broad brown band containing a fine whitish line, which is waved, contracting in the incisures; a subdorsal white line strongly edged below with brown. A broad pale lateral and substigmal band separated by stigmatal brown mottlings; subventral region heavily brown-mottled with a narrow light pedal line. Feet dark-mottled without, especially the oval shields. Spiracles whitish, black-rimmed.—H. G. D.

*2320. Homohadena fifia. (Plate CI. fig. 1.)

Homohadena fifia, Dyar, Can. Ent. xxxvi. p. 30 (1904).

Differs from *H. badistriga* in being darker grey, the ground-colour ashen grey obscured by dark shades and without any rufous tinge; the markings similar, varying much in the extent of the dark shades; tegulæ grey, scarcely contrasting with the thorax.

Hab. Canada, Br. Columbia, Kaslo. *Exp.* 32 millim. This species is unknown to me; figured from drawing from type in U.S. Nat. Mus.

*2321. Homohadena retroversa. (Plate CI. fig. 2.)

Homohadena retroversa, Morr. Proc. Bost. Soc. N. H. xvii. p. 157 (1874); Smith, Cat. Noct. N. Am. p. 157.

Head and thorax fuscous grey. Fore wing fuscous grey; subbasal line represented by a dark striga from costa; an indistinct slight black streak in base of submedian fold; antemedial line distinct, slightly and evenly excurved; a slight indistinct streak in discal fold through the reniform to subterminal line; orbicular and reniform with ill-defined rather broad pale annuli; postmedial line strongly bent outwards below costa, excurved to vein 4, then

toothed inwards to antemedial line in submedian fold and again excurved to inner margin; subterminal line indicated by a slight dark shade and the somewhat paler terminal area; a terminal series of small black lunules. Hind wing fuscous, paler towards base; a dark postmedial line; the underside much paler with some dark irroration, a distinct discoidal lunule and dark postmedial line with the area beyond it tinged with fuscous.

Hab. U.S.A., Missouri. *Exp.* 32 millim. This species is unknown to me; figured from drawing from specimen in U.S. Nat. Mus.

2322. **Homohadena infixa.** (Plate CI. fig. 3.)

Xylophasia infixa, Wlk. ix. 178 (1856); Smith, Cat. Noct. N. Am. p. 157.
Homohadena kappa, Grote, Trans. Am. Ent. Soc. v. p. 92 (1874).

♂. Head and thorax pale red-brown mixed with greyish and slightly irrorated with dark brown, the head rather deeper rufous; tegulæ blackish at base; tarsi with blackish bands; abdomen pale rufous. Fore wing reddish ochreous tinged with brown and thickly irrorated with dark brown; subbasal line represented by black striæ from costa and cell; a slight dark streak in submedian fold continuous with a strong streak between ante- and postmedial lines; antemedial line strong, black, slightly angled inwards in submedian fold; orbicular and reniform with brown centres and faint pale undefined outlines, the former round; a black streak in discal fold from orbicular to near termen: postmedial line strong, black, slightly bent outwards below costa, excurved to vein 4, then strongly incurved, and excurved again to inner margin, with slight dark streaks interrupted by pale points beyond it on costa; subterminal line very indistinct, pale, defined on inner side by more or less developed black wedge-shaped streaks; a terminal series of small black lunules; cilia chequered whitish and fuscous with fine pale line at base. Hind wing whitish suffused with brown, the interspaces of basal half paler; cilia white with a brown line near base; the underside white, the costal area irrorated with brown, the terminal area suffused with brown except towards tornus, a small discoidal spot and curved minutely waved postmedial line showing through to upperside.

♀. Head and thorax except tegulæ darker; fore wing suffused with dark brown except costal area and beyond postmedial line from vein 4 to inner margin.

Hab. U.S.A., Iowa, Missouri, Kansas (*Snow*), 1 ♂, 1 ♀, type *kappa*, Texas, Florida (*Doubleday*), 1 ♂ type. *Exp.* 36–40 millim.

2323. **Homohadena induta.** (Plate CI. fig. 4.)

Homohadena induta, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 274 (1874); Smith, Cat. Noct. N. Am. p. 157.

♂. Head and thorax reddish brown slightly mixed with grey

and black; tegulæ black at base and with black dorsal streak; tarsi slightly ringed with black and whitish; abdomen pale brown irrorated with fuscous, the ventral surface whitish irrorated with brown. Fore wing reddish brown slightly irrorated with grey and black, the veins with faint dark streaks; subbasal line represented by slight black striæ from costa and cell; a slight black streak in submedian fold from base to postmedial line; antemedial line single, black, excurved in cell, then somewhat oblique; stigmata absent; faint traces of a medial shade; postmedial line black, strongly excurved below costa, then minutely dentate, excurved to vein 4, then strongly incurved and somewhat angled inwards in submedian fold; no trace of subterminal line; a fine black terminal line. Hind wing whitish suffused with brown, the veins and terminal area darker; a fine brown terminal line; cilia whitish with a brown line through them; the underside white, the costal and terminal areas irrorated with brown, a slight discoidal lunule and curved postmedial line with minute dark streaks at the veins.

Hab. U.S.A., Texas, 4 ♂ type, Shovel Mts., 1 ♂. *Exp.* 32–34 millim.

2324. Homohadena loculosa. (Plate CI. fig. 5.)

Perigea loculosa, Grote, Papilio, i. p. 154 (1881); Smith, Cat. Noct. N. Am. p. 154.

♂. Head and thorax pale and dark rufous; tegulæ dark rufous at base and with dark line near tips; tarsi ringed with white; abdomen greyish mixed with fuscous and rufous, the extremity more rufous. Fore wing whitish, almost wholly suffused with purplish rufous; the veins streaked with black; a black streak below base of cell; subbasal line represented by a slight striga from costa; antemedial line defined by whitish on inner side, strongly angled outwards in cell and to postmedial line in submedian fold and at inner margin; orbicular represented by a short white streak slightly defined by black; reniform white, undefined, with narrow black lunule in centre and white streak before its upper edge; postmedial line defined by whitish on outer side, bent outwards below costa, then minutely dentate, angled inwards in discal fold and oblique below vein 4, incurved to angle of antemedial line in submedian fold, some white points beyond it on costa; subterminal line absent, the interspaces between veins 5 and 8 deeper purplish red; a terminal series of black striæ; cilia chequered whitish and fuscous. Hind wing white, the veins of terminal half tinged with brown; a terminal brown line; cilia white tinged with brown and ochreous at base; the underside with the costal area irrorated with brown, a small discoidal spot and postmedial series of minute streaks on the veins forming a line towards costa.

♀. Hind wing suffused with brown, rather darker on terminal area.

Hab. U.S.A., New Mexico, Arizona, Tucson, Prescott, 1 ♂, 1 ♀ type. *Exp.* 30 millim.

*2325. Homohadena deserta.

Homohadena deserta, Smith, Proc. U.S. Nat. Mus. xiii. p. 402 (1890); id. Cat. Noct. N. Am. p. 157.

♂. Head deep brown with the palpi paler; thorax greyish fuscous. Fore wing greyish fuscous, the costal area suffused with pale grey; the veins with dark streaks; subbasal line distinct; a slight black streak in base of submedian fold; antemedial line strong, black, evenly oblique, orbicular elongate elliptical with pale annulus; reniform small, irregular, with incomplete pale annulus; a very faint medial shade; postmedial line single, fine, black, strongly bent outwards below costa, excurved to vein 4, then strongly incurved; subterminal line represented by an irregular series of pale marks in the interspaces; a series of black streaks in interspaces of terminal area; a terminal series of black lunules and a pale line at base of cilia. Hind wing white, the veins and terminal area suffused with fuscous, the underside white, the costal and terminal areas with dark irroration, a postmedial series of dark points on the veins.

Hab. U.S.A., Colorado desert. *Exp.* 31 millim. This species is unknown to me.

*2326. Homohadena epipaschia.

Homohadena epipaschia, Grote, Proc. Kansas Ac. Sci. viii. p. 49 (1882); Smith, Cat. Noct. N. Am. p. 157.

Fore wing clay-grey much suffused with black; the lines single, black, the antemedial line strong, somewhat excurved, some blackish suffusion in cell between the pale fuscous undefined orbicular and reniform stigmata; postmedial line strongly bent outwards below costa, excurved to vein 4, then incurved; subterminal line minutely dentate, pale with black marks beyond in the interspaces and pale streaks on the veins; cilia dark. Hind wing fuscous black; the underside grey with discoidal point and curved postmedial line.

Hab. U.S.A., Kansas. *Exp.* 30 millim. This species is unknown to me.

*2327. Homohadena coclei. (Plate CI. fig. 6.)

Homohadena cocklei, Dyar, Can. Ent. xxxvi. p. 31 (1904).

♂. Brownish black, some of the scales tipped with grey. Fore wing with the basal area grey, the medial area black; the postmedial area paler; antemedial line single, black, slightly excurved in interspaces; orbicular and reniform obsolescent, the former hardly traceable, the latter paler; postmedial line single, black, bent outwards below costa, excurved to vein 4, then incurved; subterminal line diffused, blackish, its outer edge greyish on inner half expanding into an ill-defined patch at tornus; cilia dark. Hind wing blackish, the cilia white; the underside with discoidal lunule.

Hab. Canada, Br. Columbia (*Ainsworth*). *Exp.* 27 millim. This species is unknown to me; figured from drawing from type in U.S. Nat. Mus.

2328. Homohadena incomitata. (Plate CI. fig. 7.)

Homohadena incomitata, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 6 (1875); Smith, Cat. Nat. N. Am. p. 156.

Head and thorax reddish brown mixed with grey, the head rather darker; tegulæ with black streak at middle; tarsi with slight pale rings; abdomen whitish suffused with red-brown. Fore wing reddish brown slightly mixed with whitish, the veins with light dark streaks; antemedial line indistinct, with minute black streaks on median nervure and vein 1, excurved below costa and on inner area and slightly angled inwards in submedian fold; stigmata absent; postmedial line indistinct, with minute black streaks on the veins, bent outwards below costa, excurved to vein 4, then oblique and bent inwards to near antemedial line at inner margin; subterminal line represented by traces of dark points on the veins; a terminal series of minute black lunules; cilia whitish at tips. Hind wing whitish, the veins and terminal area suffused with brown, more uniform brown in female; cilia white; the underside whiter, the costal and terminal areas irrorated with reddish brown, a small discoidal spot and postmedial series of points on the veins.

Hab. U.S.A., Texas, 2 ♂ type. *Exp.* 36–38 millim.

2329. Homohadena stabilis. (Plate CI. fig. 8.)

Homohadena stabilis, Smith, Ent. News. vii. p. 29. pl. xv. f. 15 (1896); Dyar, Cat. Lep. N. Am. p. 124.

♂. Head and thorax dark red-brown; tegulæ whitish at tips; abdomen greyish suffused with brown. Fore wing glossy red-brown slightly irrorated with fuscous; subbasal line absent; antemedial line very indistinct, minutely waved, oblique from costa to median nervure; stigmata absent; postmedial line obliquely bent outwards below costa, excurved to vein 4, obliquely incurved to submedian fold, then excurved to inner margin; terminal area more strongly irrorated with black. Hind wing brown with a golden gloss, the terminal area slightly darker; cilia whitish with a dark line near base; the underside whitish thickly irrorated with brown, a discoidal lunule and curved postmedial line, incurved in submedian interspace.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 4 ♂; U.S.A., Washington Territory, 2 ♂. *Exp.* 34 millim.

*2330. Homohadena inconstans.

Homohadena inconstans, Grote, Can. Ent. xv. p. 28 (1883); Smith, Cat. Noct. N. Am. p. 156.

Fuscous grey; head fuscous; tegulæ grey. Fore wing with the lines absent, the veins in female, especially the median nervure, with dark streaks; stigmata absent. Hind wing fuscous, the basal area paler, the veins suffused with fuscous; the underside paler, the female with traces of postmedial series of dark points on the veins.

Hab. U.S.A., Arizona. *Exp.* 32-34 millim. This species is unknown to me.

Genus **PSEUDANARTA.**

Type.

Pseudanarta, Grote, Bull. Geol. Geog. Surv. Terr. iv. p. 178 (1878); id. Bull. Geol. Geog. Surv. Terr. v. p. 205 (1879); non descr. Smith, Ent. Am. v. p. 175 (1889)..... *flava.*

Proboscis fully developed; palpi upturned to vertex of head, the 2nd joint clothed with long hair, the 3rd short oblique; frons smooth, rounded; eyes large, round; antennæ of male ciliated; head and thorax chiefly clothed with rough scales, the pro- and metathorax with spreading crests; tibiæ fringed with hair; abdomen with dorsal series of crests. Fore wing rather narrow, the apex somewhat produced and acute and the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with black streak in submedian fold between ante- and postmedial lines.
  a. Fore wing with the postmedial line angled inwards in submedian fold, remote from antemedial line and approximated to subterminal line ..... *flava.*
  b. Fore wing with the postmedial line incurved in submedian interspace, nearer antemedial line and well separated from subterminal line ..... *crocea.*
  c. Fore wing with the postmedial line oblique, not incurved in submedian interspace ..... *singula.*
B. Fore wing without black streak in submedian fold between ante- and postmedial lines.
  a. Fore wing with the antemedial line excurved from below costa to inner margin ..... *flavidens.*
  b. Fore wing with the antemedial line oblique from below costa to above inner margin..... *falcata.*

2331. Pseudanarta flava.

Hadena flava, Grote, Trans. Am. Ent. Soc. v. p. 91 (1874); Smith, Cat Noct. N. Am. p. 148.

Head and thorax dark brown, the scales tipped with grey; tarsi blackish ringed with white; abdomen with tufts of pale hair at base, brown irrorated with grey, the dorsal crests dark. Fore wing dark

brown irrorated with grey, leaving a reddish-brown patch in, below, and beyond end of cell; a slight black streak below base of cell; traces of a double waved subbasal line from costa to submedian fold; antemedial line indistinctly double filled in with grey, angled outwards below costa, then oblique to submedian fold and angled inwards on vein 1, connected by a black streak in submedian fold with the postmedial line; orbicular and reniform small, indistinctly defined, the former oblique elliptical; postmedial line double filled in with white, the inner line prominent, black, bent outwards below costa, angled inwards in discal fold, oblique below vein 4 and angled inwards in submedian fold, some slight grey points beyond it

Fig. 54.—*Pseudanarta flava*, ♂. ½.

on costa; subterminal line closely approximated to postmedial line, whitish defined by rufous on inner side and on outer side by slight dark marks, angled outwards at vein 7, inwards in discal fold and incurved below vein 4. Hind wing orange-yellow with terminal black band rather wide at costa and narrowing to tornus, its inner edge incurved at discal and submedial folds; cilia yellowish white at tips; the underside with the costal area irrorated with brown, a small black discoidal spot.

Hab. CANADA, Br. Columbia, 1 ♂ type; U.S.A., California (*Walsingham*), 1 ♂, 4 ♀. *Exp.* 28 millim.

2332. Pseudanarta crocea. (Plate CI. fig. 9.)

Anarta crocea, H. Edw. Proc. Cal. Ac. Nat. Sci. vi. p. 133 (1875); Smith, Cat. Noct. N. Am. p. 148.

Head, thorax, and abdomen grey-white mixed with fuscous; the base of abdomen with lateral tufts of whitish hair. Fore wing grey-white thickly irrorated with fuscous, leaving an ochreous patch tinged with rufous from below end of cell to postmedial line between vein 3 and submedian fold; traces of a double waved subbasal line from costa to submedian fold; antemedial line double, sinuous, oblique from costa to submedian fold and angled inwards on vein 1, connected with postmedial line by a black streak in submedian fold; orbicular and reniform small, narrow, with whitish annuli, the former oblique elliptical; postmedial line double, filled in with white, bent outwards below costa, angled inwards in discal fold and incurved below vein 4; subterminal line well separated from the postmedial, grey defined by rufous on inner side and with slight dark streaks

beyond it on the veins, angled outwards at vein 7 and excurved at middle. Hind wing yellow with black terminal band, broad at costa, narrowing to tornus, its inner edge slightly sinuous; cilia white with a fuscous line at base; the underside with the costal area whitish irrorated with brown; a small black discoidal lunule.

Hab. U.S.A., Oregon, 1 ♀, Sheep Rock (*Walsingham*), 1 ♀, Colorado, 2 ♀, Berkeley (*Oslar*), 3 ♂, 1 ♀, Nevada, Arizona. *Exp.* 26 millim.

2333. Pseudanarta singula. (Plate CI. fig. 10.)

Hadena singula, Grote, Can. Ent. xii. p. 215 (1880); Smith, Cat. Noct. N. Am. p. 148.

Head and thorax grey mixed with dark brown and black; tarsi black ringed with white; pectus slightly tinged with purple; abdomen grey mixed with fuscous, the tufts of hair at base yellowish, the anal tuft brownish. Fore wing brownish grey thickly irrorated with fuscous, the area below and beyond end of cell brown; a black streak below base of cell and another above inner margin before middle; subbasal line indistinct, double, angled inwards in cell; antemedial line indistinctly double filled in with grey, angled outwards below costa, inwards on vein 1 and strongly outward above inner margin, a black streak in submedian fold from it to postmedial line; orbicular and reniform moderate, grey defined by black and their centres slightly with brown, the former oblique elliptical; postmedial line double filled in with grey, the inner line strong, black, bent outwards below costa, incurved at discal fold and oblique below vein 4, some white points beyond it on costa; subterminal line grey defined by brown on inner side, with slight dark streaks beyond it on the veins and with dentate black marks beyond it above and below vein 6, angled outwards at vein 7 and incurved at discal and submedian folds; a fine terminal black line. Hind wing orange-yellow with terminal black band broad at costa, narrowing to tornus, its inner edge sinuous; cilia fuscous at base, white at tips; the underside with the costal area irrorated with brown, a discoidal point.

Hab. U.S.A., Texas (*Belfrage*), 1 ♂ type, Colorado, Arizona, Yavapai Co., Prescott (*Kunzé*), 7 ♂, 4 ♀. *Exp.* 28–30 millim.

2334. Pseudanarta flavidens. (Plate CI. fig. 11.)

Hadena flavidens, Grote, Bull. Geol. Geog. Surv. Terr. v. p. 205 (1879); Smith, Cat. Noct. N. Am. p. 149.

Head and thorax grey mixed with dark brown and black; tarsi blackish ringed with white; abdomen grey mixed with brown; the lateral tufts of hair at base yellowish. Fore wing grey suffused with reddish brown and fuscous, the medial area rather darker; subbasal line double, minutely waved, from costa to vein 1; antemedial line indistinctly double, slightly angled outwards below costa,

then excurved; claviform minute, incompletely defined by black; orbicular and reniform small, with whitish annuli incompletely defined by black, the former round; a black medial line; postmedial line defined by whitish on outer side, bent outwards below costa, excurved to vein 5, then incurved; subterminal line whitish, slightly defined by red-brown on inner side and by a dentate black line on outer, angled outwards at vein 7 and incurved at discal and submedian folds; the veins of terminal area with slight dark streaks; a fine dark terminal line. Hind wing orange-yellow with black terminal band, broad at costa, narrowing to tornus, its inner edge rather sinuous; cilia white at tips; the underside with the costal area irrorated with brown, a discoidal point.

Hab. U.S.A., Colorado, 1 ♀ type (*Cockerell*), 5 ♂, New Mexico, Beulah (*Cockerell*), 1 ♂. *Exp.* 30 millim.

2335. Pseudanarta falcata. (Plate CI. fig. 12.)

Pseudanarta falcata, Neum. Pap. iii. p. 141 (1883); Smith, Cat. Noct. N. Am. p. 149.

Head and thorax red-brown irrorated with white; tarsi ringed with white; abdomen brown mixed with grey and ventrally irrorated with white. Fore wing red-brown irrorated with white, especially on the veins; antemedial line indistinct, defined by white scales on inner side, slightly angled outwards below costa, then oblique to above inner margin, to which it is bent inwards; orbicular and reniform narrow, defined by white scales, the former very oblique elliptical, the latter rather concave towards base; postmedial line indistinct, defined by white on outer side, bent outwards below costa, excurved to vein 5, then oblique; an indistinct sinuous white subterminal line and a fine white line just before termen. Hind wing orange with black terminal band, broad at costa, narrowing to tornus; cilia fuscous at base, yellowish white at tips; the underside with the costal area slightly irrorated with brown, a black discoidal point.

Hab. U.S.A., Texas, Shovel Mt., 1 ♂, Kerrville, 1 ♂, 2 ♀, Arizona, Fort Huachuca. *Exp.* 26 millim.

Genus FERALIA.

	Type.
Feralia, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 58 (1874).....	*jocosa*.

Proboscis slight, non-functional; palpi short, upturned, fringed with long hair in front; frons smooth; eyes small, elliptical; antennæ of male bipectinate with short fine branches, decreasing to base and apex, of female ciliated with minute tufts of scales at the joints; head and thorax clothed with rough hair only, the pro- and metathorax with slight crests; pectus and legs clothed with long hair; abdomen clothed with rough hair and with lateral fringes of hair but without crests. Fore wing triangular, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from below middle of discocellulars; 6, 7 stalked; 8 anastomosing with the cell near base only.

A. Head, thorax, and fore wing emerald-green.
  a. Fore wing with series of large black patches in interspaces of terminal area ..... *columbiana.*
  b. Fore wing with subterminal black patch above tornus only ..... *jocosa.*
B. Head, thorax, and fore wing grey and brown ..... *major.*

*2336. Feralia columbiana. (Plate CI. fig. 13.)

Feralia columbiana, Smith, Can. Ent. xxxv. p. 9 (1903).

♂. Head and thorax bright emerald-green; a black spot between antennæ; tegulæ with black dorsal patch, tipped with white; shoulders with black patches; patagia edged with black; thorax edged with black, the crests marked with black; pectus clothed with long fuscous hair; legs banded, black, white, and green; abdomen deep fuscous brown, the anal tuft yellowish or whitish. Fore wing bright emerald-green; subbasal line single, black with a few white scales on it, diffused at inner margin; antemedial line single, black defined by a white line on outer side, excurved in interspaces; sometimes connected with the subbasal line by a black streak below median nervure; claviform defined by black scales and more or less filled in with white; orbicular round or elliptical, more or less completely defined by white and black; reniform large, slightly constricted at middle, with diffused white annulus defined by black; medial line irregular, interrupted, obsolescent at middle, the outer half of medial area sometimes irrorated with black; postmedial line black defined by a white line on inner side, rather diffused on outer, very irregularly dentate, angled outwards at vein 4; the postmedial and terminal areas with a series of large black spots in the interspaces preceded by white scales, the subterminal line absent; cilia white intersected with black. Hind wing blackish with the cilia white, or the base and termen suffused with white; the underside with large black discoidal spot, a double postmedial line.

Hab. Canada, Br. Columbia, New Westminster. *Exp.* 40 millim. This species is unknown to me; figured from drawing from type in U.S. Nat. Mus.

2337. Feralia jocosa.

Diphtera jocosa, Guen. Noct. i. p. 37 (1852); Smith, Cat. Noct. N. Am. p. 33.
Moma fallax, Grote & Rob. Trans. Am. Ent. Soc. ii. p. 77 (1868).

♂. Head and thorax emerald-green; palpi, lower part of frons, and vertex of head black; antennæ fulvous, tegulæ black at base and tips; patagia edged with black except at tips; pro- and metathoracic crests tipped with black; pectus mostly blackish, tibiæ and tarsi banded with black; abdomen reddish brown suffused with black and with dorsal series of whitish spots. Fore wing emerald-

green sparsely irrorated with black on medial area; some black at base of costa; subbasal line represented by black spots below costa and cell; antemedial line strong, black, double, waved, angled inwards in cell and on vein 1; claviform large, defined by black except above and with black mark in centre; orbicular and reniform large with whitish annuli defined by black and connected by two black streaks in cell, the former quadrate, open above and below, the latter open above and slightly angled inwards on median nervure; a medial line from claviform to inner margin, angled outwards on vein 1; postmedial line double, black filled in with white, strongly bent outwards below costa, then dentate, below vein 4 obliquely incurved to below reniform, some black and white points on costa beyond it; subterminal line represented by a black bar from costa and patch above tornus; a terminal series of minute black lunules defined by white on inner side; cilia chequered green and black with the tips of green parts whitish. Hind wing pale wholly suffused with fuscous brown; cilia white intersected with fuscous; the underside with whitish streaks and marks in the interspaces, a blackish streak in cell, large discoidal spot and obliquely curved postmedial line.

Fig. 55.—*Feralia jocosa*, ♂. ½.

♀. Hind wing blacker.

Ab. 1. Fore wing wholly suffused with black except terminal area, leaving some green below base of costa, the claviform, orbicular and reniform, and a streak from upper extremity of latter green.

Hab. U.S.A., New Hampshire, New York, 1 ♂, 2 ♀ type, New Jersey. *Exp.* 38–40 millim.

Larva. Seifert, J. N.Y. Ent. Soc. vi. p. 182.

Deep glossy pea-green, very transparent; head and legs yellowish green; cervical shield and dorsal hump on 11th somite brighter green; dorsal and lateral stripes white, finely wrinkled, the former expanding at middle of abdominal somites, the latter forming a series of spindle-shaped spots on abdominal somites connected by streaks; a stigmatal series of crescentic cream-coloured spots, yellow-edged and bordered above by cherry-red, on thoracic somites the spots more elongate, on terminal two somites forming a single spot ending in a streak; a series of irregular oblong cream-coloured spots above the feet except on first and terminal somites; a few fine hairs. Food-plant, *Tsuga canadensis*. 5–6.

2338. Feralia major. (Plate CI. fig. 14.)

Feralia major, Smith, Ent. Am. vi. p. 26 (1890); id. Cat. Noct. N. Am. p. 34.

Head and thorax clothed with grey and dark iron-brown scales and hair; tibiæ and tarsi white banded with brown; abdomen red-brown mixed with grey-white, the ventral surface whitish. Fore wing grey-white thickly irrorated with dark iron-brown, the medial and postmedial areas almost wholly suffused with iron-brown, the costa with alternate brown and whitish marks; antemedial line very indistinct, waved; claviform, orbicular, and reniform greyer, very indistinctly defined, the claviform confluent with the orbicular which is somewhat quadrate, the reniform strongly constricted at middle; postmedial line unusually near termen, minutely waved, slightly incurved from costa to vein 4, then very obliquely incurved, a brown patch beyond it above tornus; a terminal series of minute brown points; cilia chequered white and brown. Hind wing white suffused and irrorated with iron-brown, the veins brown; cilia white slightly intersected with brown; the underside whiter, a diffused oblique brown antemedial line, discoidal spot, and curved postmedial line showing through to upperside.

Hab. U.S.A., New Hampshire, Plattsburg, New York, 1 ♂, District of Columbia. *Exp.* 42 millim.

Genus **MOMAPHANA.**

	Type.
Momaphana, Grote, Stett. ent. Zeit. xxxvi. p. 195 (1875)	*comstocci.*
Arthrachlora, Grote, Stett. ent. Zeit. xxxvi. p. 197 (1875)	*februalis.*

Proboscis fully developed; palpi upturned, fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of male bipectinate with moderate branches decreasing in length to base and apex, of female minutely serrate; head and thorax clothed with rough hair and hair-like scales, the vertex of head crested, the prothorax with slight spreading crest, the meso- and metathorax with divided crests; pectus and legs clothed with long hair and scales, the tarsal joints with tufts of hair; abdomen with some rough hair at base but without crests and with lateral fringes of hair. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the subterminal line obsolete except at costa and tornus.
  a. Fore wing with black suffusion on medial area in, below, and beyond cell .... *comstocci.*
  b. Fore wing without black suffusion on medial area..... *februalis.*
B. Fore wing with the subterminal line entire ..... *brillians.*

2339. Momaphana comstocci.

Feralia comstocki, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 59 (1874); Smith, Cat. Noct. N. Am. p. 34.

♂. Head and thorax pale bright green; sides of palpi and frons with some black; a black bar between antennæ; tegulæ with

some black at base and black tips; patagia black on outer side; meso- and metathoracic crests black; tibiæ and tarsi banded with black; abdomen pale greenish irrorated with black and with dorsal black patches. Fore wing pale bright green; some black at base of costa; subbasal line obliquely curved, formed by small black spots below costa and cell and diffused black on inner margin at base; antemedial line from costa close to subbasal line, formed by small black spots below costa and cell, and a line from submedian fold to inner margin angled inwards on vein 1; orbicular and reniform rather quadrate, defined by black at sides, open above and

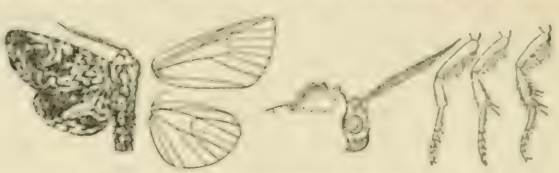


Fig. 56.—*Momaphana comstocci*, ♂. ½.

below and with black patches between them and beyond the latter extending to postmedial line; medial line represented by a striga from costa, a curved bar from cell to submedian fold with black suffusion beyond it to postmedial line and a striga at inner margin; postmedial line formed by a strong oblique black bar from costa, then dentate, excurved at middle and incurved below vein 3, with some black beyond it in submedian interspace; a terminal series of black points; cilia chequered black and green. Hind wing pale green, the terminal half irrorated with black, some of the scales forming a diffused subterminal band; the underside with diffused antemedial line angled outwards below costa and at vein 1, a large discoidal lunule, a diffused postmedial line angled outwards at middle.

♀. Hind wing more suffused with fuscous.

Hab. Canada, Orilla (*Bush*), 1 ♀; U.S.A., New York, 1 ♂ type.
Exp. 40 millim.

2340. **Momaphana februalis.** (Plate CI. fig. 15.)

Feralia februalis, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 60 (1874); Smith, Cat. Noct. N. Am. p. 33.

♂. Head and thorax emerald-green; palpi and frons black at sides; antennæ pale fulvous, whitish at base; tegulæ with some black and white at base and some black at tips; patagia with some black on outer edges and at tips; metathorax with two black points; tarsi banded with black and white; abdomen fulvous yellow, the base whitish with black dorsal mark, the extremity pale green with black dorsal mark on subterminal segment, the ventral surface pale green with slight black bands. Fore wing emerald-green; subbasal line black defined by white on inner side, interrupted, angled outwards in cell and ending in submedian fold; antemedial line black defined by white on outer side, interrupted,

excurved in cell and submedian interspace; claviform large, defined by white and black at extremity only; orbicular and reniform large with white annuli, the former rather quadrate, defined by black at sides only, the latter defined by black except above, strongly constricted at middle; medial line represented by a black striga from costa and a line from claviform to inner margin, angled outwards on vein 1 and inwards above inner margin; postmedial line black defined by white on inner side, strongly bent outwards below costa and almost obsolete, then dentate, below vein 4 bent inwards to lower edge of reniform and oblique to inner margin, some black and white points beyond it on costa; subterminal line represented by an incurved black line from costa to vein 7 with some slight whitish marks below it; a crenulate black terminal line slightly defined by white on inner side; cilia with whitish tips with series of black points on them. Hind wing white slightly tinged with green; cilia pale green; the underside with some black scales on costa at base and middle, a short streak in cell and discoidal spot with white lunule in centre.

♀. Head, thorax, and fore wing tinged wholly or in part with sap-green, the black markings rather stronger; hind wing rather greener with indistinct antemedial and postmedial lines, the former oblique, the latter excurved at middle, then incurved, a more or less developed waved black terminal line, the underside with the lines and discoidal lunule stronger.

Hab. U.S.A., California (*Stretch*), 1 ♂, Sanzalito, 3 ♂, 1 ♀ type, San Rafael (*Kendall*), 1 ♀. *Exp.* 40–42 millim.

2341. **Momaphana brillians.** (Plate CI. fig. 16.)

Feralia brillians, Barnes, Can. Ent. xxxiii. p. 56 (1901); Dyar, Cat. Lep. N. Am. p. 121.

♀. Head and thorax emerald-green; sides of palpi and frons black; tegulæ black at base of sides and middle of tips; patagia with black scales near upper edge which is white; meso- and metathoracic crests black-tipped; tibiæ and tarsi banded with black; abdomen golden-brown, green at base with dorsal tuft of black hair, the ventral surface whitish, black at extremity. Fore wing emerald-green with shades of deeper green, the medial area with some dark suffusion except towards costa and inner margin; subbasal line represented by a black striga from costa defined by white on outer side and two from cell filled in with white; antemedial line black defined by white on inner side, oblique, irregularly waved, ending at vein 1; claviform a minute white spot; orbicular and reniform large, green with white annuli defined at sides only by black, the former elongate and defined on inner side by the antemedial line, the latter quadrate; a medial black point on costa; postmedial line black defined by white on outer side, forming a black spot at costa, strongly bent outwards below costa, then dentate, below vein 4 very obliquely incurved and ending at vein 1 close to antemedial line, some black marks on costa beyond it;

subterminal line white, dentate, defined on inner side by small dentate black marks and by a black bar from costa, angled outwards at vein 7 and incurved below vein 3, a reddish-brown patch from it to termen above tornus; cilia chequered whitish and dark reddish brown. Hind wing white tinged with green towards termen, a few dark scales at tornus; cilia chequered white and pale green, with some brown points at tips and elongate mark below vein 1; the underside with brown spot on middle of costa and faint traces of postmedial line.

Hab. U.S.A., Arizona, Huachuca Mts., 1 ♀. *Exp.* 44 millim.

Genus BRACHIONYCHA.

	Type.
Brachionycha, Hübn. Verz. p. 144 (1827)	*nubeculosa.*
Petasia, Steph. Ill. Brit. Ent., Haust. ii. p. 31 (1829)	*sphinx.*
Asteroscopus, Boisd. Dup. Cat. Méth. p. 89 (1844)	*sphinx.*

Proboscis absent or aborted and small; palpi porrect to just beyond frons and clothed with long hair; frons smooth, rounded; eyes large, rounded; antennæ of male bipectinate and with a large tuft of hair on basal joint; head and thorax clothed with long thick hair; the tegulæ produced to a slight dorsal ridge, the thorax without distinct crests; fore tibia with long curved claw at extremity; abdomen clothed with long rough hair and without crests. Fore wing rather long and narrow; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked; 8 anastomosing with the cell near base only.

Sect. I. (*Petasia*). Antennæ of male bipectinate to base; proboscis absent.

2342. Brachionycha sphinx.

Phalæna sphinx, Hüfn. Berl. Mag. iii. p. 400 (1767); Esp. Schmett. iii. pl. 49. ff. 1–3; Staud. Cat. Lep. pal. p. 181.

Bombyx cassinia, Schiff. Wien. Verz. p. 61 (1776); Fabr. Mant. Ins. ii. p. 126 (1787); Hübn. Bomb. i. ff. 5, 6; Don. Nat. Hist. Brit. Ins. xii. p. 4, pl. 397. f. 2; Dup. Lep. Fr. vii. p. 216, pl. 114. f. 2; Steph. Ill. Brit. Ent., Haust. ii. p. 32.

Head and thorax grey-white mixed with dark brown; sides of palpi and frons reddish brown, dark streaks on vertex of head and upper edge of tegulæ and patagia; tarsi ringed with brown; abdomen ochreous or dark brown. Fore wing grey-white more

Fig. 57.—*Brachionycha sphinx*, ♂. ½.

or less strongly suffused and irrorated with dark brown, a sinuous black streak below base of cell, with a short streak above its extremity; a slight subbasal streak below costa; antemedial line

represented by an oblique striga from costa; a slight streak in medial part of submedian fold and a longer more prominent streak on inner margin; orbicular represented by two slight streaks; reniform only defined by two oblique striæ above and an oblique streak in lower part of cell and streak below median nervure representing a strong recurrent angle on median nervure; postmedial line almost obsolete and slightly defined by white on outer side, bent outwards below costa, then represented by short streaks on the veins, strongly incurved below vein 4; subterminal line represented by a series of **V**-shaped white marks defined on inner side by wedge-shaped black marks and streaks and with streaks beyond it in the interspaces, strongly angled inwards in submedian fold; cilia chequered brown and grey. Hind wing grey-white or yellowish white more or less irrorated with brown and usually with a diffused dentate subterminal band, incurved below vein 3; the underside with discoidal lunule and terminal series of small lunules.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Switzerland; N. Italy; S. Scandinavia; Russia, Livonia. *Exp.* 42–50 millim.

Larva. Meyr. Brit. Lep. p. 57; Barrett, Lep. Brit. iii. p. 156, pl. 112. f. 2.

Pale green; dorsal and subdorsal lines whitish, the latter on abdominal somites only; spiracular line yellowish white, brown-edged above; somite 11 with slight prominence. Food-plants: Oak, elm, hawthorn, &c. 5–6.

Sect. II. (*Brachyonycha*). Antennæ of male serrate at base, then bipectinate with short stiff branches; proboscis aborted, small.

A. Fore wing with strong white streak on lower edge of reniform. *nebeculosa.*
B. Fore wing with slight white streak on lower edge of reniform. *borealis.*

2343. Brachionycha nubeculosa.

Bombyx nubeculosa, Esp. Schmett. iii. pl. 48. f. 6 (1785); Meig. Syst. Beschr. Eur. Schmett. iii. p. 179, pl. 109. f. 8; Dup. Lép. Fr. vii. p. 220, pl. 114. f. 1; Staud. Cat. Lep. pal. p. 181.
Bombyx centrolinea, Fabr. Mant. Ins. ii. p. 126 (1787).
Bombyx sphinx, Hübn. Bomb. i. ff. 3, 4 (nec Hüfn.).

Head and thorax fuscous or dark reddish brown mixed with

Fig. 58.—*Brachionycha nubeculosa*, ♂. ½.

grey; tarsi with pale rings; abdomen deep rufous to fuscous tinged with grey. Fore wing grey often tinged with rufous and

more or less thickly irrorated and suffused with fuscous; the veins blackish; subbasal line represented by a striga from costa and point on median nervure, the antemedial line by a striga from costa and points on the veins, slightly defined by white on inner side; claviform moderate or large, defined by black; orbicular small, elongate, placed near the reniform, which is very large, whitish defined by black except at middle of outer edge, with some fuscous suffusion in centre with black streak below it, angled inwards on median nervure; postmedial line indistinct, defined by whitish on outer side, distinctly so in the darker specimens, bent outwards below costa, then dentate, oblique below vein 4; some white points beyond it on costa; subterminal line only defined by the terminal area being rather paler and by some black marks in the interspaces before it; a series of short streaks on termen and cilia. Hind wing grey suffused and irrorated with fuscous and sometimes slightly tinged with rufous; the underside paler with black streak in base of cell, discoidal spot and terminal series of small spots showing through to upper side.

Hab. Britain, Scotland, Leech Coll.; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Scandinavia; Russia, Livonia, Zeller Coll., Urals; E. Siberia, Amurland, Ussuri. *Exp.* 48–60 millim.

Larva. Meyr. Brit. Lep. p. 57; Barrett, Lep. Brit. iii. p. 159, pl. 112. f. 3.

Pale yellow-green, darker at sides; tubercles pale yellow; an oblique lateral streak on somite 3 and a transverse bar on 11; legs more or less red. Food-plant, Birch. 5–6. The larva rests with the anterior segments thrown back over body and legs outspread.

2344. Brachionycha borealis. (Plate CI. fig. 17.)

Asteroscopus borealis, Smith, Can. Ent. xxxi. p. 25 (1899); Dyar, Cat. Lep. N. Am. p. 173.

♂. Head, thorax, and abdomen black mixed with grey; antennæ red-brown; tarsi ringed with grey; abdomen with dorsal white point at base. Fore wing grey suffused and irrorated with black-brown; the veins black; subbasal line represented by slight black points on costa and below cell; antemedial line black, angled outwards below costa and in cell, excurved in submedian interspace, then strongly incurved; claviform whitish defined by black, narrow and acute at extremity; orbicular defined by black, narrow, elongate, acute at extremities, touching the large reniform, which is incompletely defined by black, its upper extremity angled outwards and with a curved grey streak defined by black on its lower edge; postmedial line black, strongly bent outwards below costa, then dentate, excurved to vein 4, then oblique; subterminal line absent; a terminal series of small rather elongate black spots; cilia intersected with black and chequered with white at tips. Hind wing whitish irrorated with brown, the veins brown; a large blackish discoidal lunule; a terminal series of small black spots; cilia

whitish; the underside with the costa suffused with black except towards apex, a black streak in cell.

Hab. Canada, Manitoba; U.S.A., Pennsylvania, Luzerne Co., 1 ♂. *Exp.* 54 millim.

Genus **LATHOSEA.**

Type.
Lathosea, Grote, Bull. Geol. Geog. Surv. Terr. vi. p. 270 (1881)..... *pulla.*

Proboscis fully developed; palpi obliquely porrect to just beyond frons and fringed with long hair below; frons smooth, rounded; antennæ of male bipectinate with short branches serrate at base and extremity; head and thorax clothed with long hair only and without crests; tibiæ fringed with long hair; abdomen with dorsal crests on basal segments, fringed with long hair at sides. Fore wing moderately broad, the termen obliquely curved, veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2345. **Lathosea pulla.**

Lathosea pulla, Grote, Bull. Geol. Geog. Surv. Terr. vi. p. 270 (1881).
Lathosea pullata, Grote, Revised List Noct. p. 14 (1890); Smith, Cat. Noct. N. Am. p. 163.

♂. Head and thorax clothed with fuscous and grey hair; abdomen dorsally black with some grey hair, greyer at sides and on ventral surface. Fore wing fuscous brown thickly irrorated with white, the veins streaked with black; a fine black streak below base of cell defined by white above and below; subbasal line represented by an oblique striga from costa; antemedial line very strongly angled outwards in the interspaces and inwards on the

Fig. 59.—*Lathosea pulla*, ♂. ½.

veins; claviform represented by a small dark mark with a whitish streak below it in submedian fold between the antemedial and subterminal lines; orbicular obsolete; claviform very indistinctly defined, narrow and strongly angled inwards on median nervure; postmedial line defined by whitish on outer side, strongly bent outwards below costa, then waved, oblique below vein 4 and angled outwards on vein 1; traces of an irregular white subterminal line, almost obsolete on costal half, angled inwards to postmedial line in submedian fold and with short oblique streak beyond it below vein 2; cilia dark intersected with white at base, mostly

white at the tips. Hind wing pale, nearly uniformly suffused with fuscous brown, the veins dark; cilia white with dark line at base from apex to vein 2; the underside white thickly irrorated with brown, the veins and a small discoidal spot dark.

Hab. U.S.A., Oregon, 1 ♂ type. *Exp.* 44 millim.

Genus COPITYPE, nov.

Type, *C. pagodæ*.

Proboscis fully developed; palpi porrect to just beyond frons and fringed with long hair below; frons with rounded prominence; eyes large, rounded; antennæ of male almost simple, somewhat thickened; head and thorax clothed with hair only and without distinct crests; fore tibia short, with long curved claw on outer side at extremity; abdomen without crests. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with cell near base only.

2346. Copitype pagodæ.

Dasypolia pagodæ, Alph. Hor. Soc. Ent. Ross. xxvi. p. 451 (1892); id. Rom. Mém. ix. p. 20, pl. 1. f. 9; Staud. Cat. Lep. pal. p. 181.

♂. Head and thorax grey-brown mixed with fuscous; tarsi blackish ringed with grey; abdomen pale grey-brown irrorated slightly with fuscous. Fore wing pale grey-brown irrorated with fuscous; a black streak below base of cell; antemedial line distinct, black, angled outwards below costa, then incurved to basal streak and bent outwards to inner margin; slight traces of a minute claviform; orbicular and reniform large, defined by black, but open above and below, the former rather elongate elliptical, the latter somewhat angled inwards on median nervure; traces of a curved

Fig. 60.—*Copitype pagodæ*, ♂. ½.

medial line; postmedial line defined by grey on outer side, slightly bent outwards below costa, then minutely waved, oblique below vein 4, with a blackish mark beyond it in submedian fold; traces of a grey subterminal line with slight dentate dark marks on inner side, angled outwards at veins 7, 4, 3; a terminal series of black striæ; cilia fuscous brown, with fine pale lines at base and middle. Hind wing pale fuscous brown with dark terminal line; cilia ochreous grey with dark line through them; underside grey irrorated with brown, a dark discoidal spot and curved postmedial line.

Hab. Tibet, Kuku-noor, 1 ♂, Amdo. *Exp.* 36 millim.

Genus PSAPHIDA.

	Type.
Psaphida, Wlk. xxxii. 447 (1865)	*resumens.*
Dicopis, Grote, Illustr. Essay, p. 40 (1882)	*resumens.*
Copivaleria, Grote, Proc. Am. Phil. Soc. xxi. pp. 146, 168 (1883).	*grotei.*

Proboscis fully developed; palpi porrect to just beyond frons and fringed with hair below; frons smooth; eyes large, rounded; antennæ of male bipectinate with long branches to apex, of female serrate; head and thorax clothed with rough scales and without crests; fore tibia with corneous process at extremity and long curved claw on inner side; the tibiæ fringed with hair, the tarsal joints with tufts of hair; abdomen fringed with hair at sides and with dorsal crests on basal segments. Fore wing with the apex rounded, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with vein 3 from or from close to angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle or shortly stalked; 8 anastomosing with cell near base only.

A. Fore wing with black streak below terminal part of vein 2.
  a. Fore wing with the claviform defined by a curved black mark from orbicular to inner side of antemedial line ... *resumens.*
  b. Fore wing with the black mark defining the claviform not crossing the antemedial line .... *grotei.*
B. Fore wing without black streak below terminal part of vein 2.
  a. Fore wing with slight black streak below base of cell ... *thaxteriana.*
  b. Fore wing with the black streak below the cell extending through the claviform to postmedial line ..... *electilis.*

2347. Psaphida resumens.

Psaphida resumens, Wlk. xxxii. 448 (1865); Smith, Cat. Noct. N. Am. p. 111.
Cymatophora viridescens, Wlk. xxxii. 601 (1865).
Dicopis muralis, Grote, 6th Rep. Peab. Acad. Sci. p. 27 (1874); id. Bull. Buff. Soc. Nat. Sci. ii. pp. 6, 77, pl. 1. f. 1.

Head and thorax white mixed with fuscous; frons with black patches at sides and bar above; tegulæ with black medial line; patagia with black line near edges; pectus and legs dark brown mixed with grey, the tarsi black ringed with white; abdomen

Fig. 61.—*Psaphida resumens*, ♂. ½.

fuscous irrorated with grey, sometimes tinged with ochreous. Fore wing whitish, more or less strongly suffused with fuscous and olive-green and sparsely irrorated with black; a black streak below the cell to just beyond antemedial line; subbasal line indistinctly double, strongly bent outwards below costa; antemedial line indistinctly double, oblique, waved; claviform represented by

a curved white mark defined by black on outer side and below from cell to the black basal streak just before antemedial line and with some black suffusion beyond it; orbicular and reniform white with more or less brown in centres and incompletely defined by black, the former round, open above and below and confluent with the claviform, the latter large; postmedial line double, strongly bent outwards below costa, incurved at discal fold, below vein 4 incurved to near claviform and slightly angled outwards on vein 1, some white points beyond it on costa; subterminal line white, ill defined, irregularly dentate, crossed by a black streak from tornen below vein 2, sometimes with short streaks above and below it; a terminal series of slight black lunules; cilia chequered fuscous and whitish. Hind wing whitish suffused with fuscous brown, rather more deeply on terminal area; a black terminal line; cilia white with brownish line at base; the underside white irrorated with brown, a discoidal spot and sinuous postmedial line showing through to upperside.

Ab. 1. *viridescens*. Head, thorax, and fore wing much darker and more evenly suffused with purplish fuscous and olive-green.

Hab. U.S.A., Massachusetts, New York, 1 ♂, 1 ♀ type *muralis*, Georgia, 2 ♂ type, Missouri, Texas, 1 ♂, Florida (*Doubleday*), 1 ♂ type *viridescens*. *Exp.* 38–44 millim.

2348. Psaphida grotei. (Plate CI. fig. 18.)

Valeria grotei, Morr. Bull. Buff. Soc. Nat. Sci. i. p. 274 (1874); Smith, Cat. Noct. N. Am. p. 111.

♂: Head and thorax olive red-brown mixed with dark brown; basal joint of antennæ white; tegulæ with dark brown medial line; dorsum of thorax with some white scales; pectus and legs brown mixed with whitish, the tarsi with white rings: abdomen whitish thickly irrorated with dark brown, the dorsal crests dark brown. Fore wing dark purplish brown mixed with olive-green and slightly irrorated with white; the veins streaked with blackish; subbasal line represented by some black scales below costa and in cell; a black streak below base of cell curved round at extremity and running back above inner margin to near base; antemedial line indistinctly double, oblique, irregularly waved; claviform represented by a curved black mark from cell to antemedial line; orbicular round with brown centre and white annulus defined by black; reniform large, white, its centre defined by fuscous; postmedial line indistinctly double, strongly bent outwards below costa, incurved at discal fold, strongly incurved below vein 4 to below cell and excurved at vein 1, some white suffusion on inner area before and beyond it; subterminal line whitish, angled outwards at vein 7, dentate at veins 4, 3, strongly incurved in submedian interspace and bent outwards to tornus, a black patch beyond it on vein 2, a terminal series of small black lunules defined by greyish. Hind wing white, the veins dark on terminal half; a sinuous

punctiform postmedial line and diffused subterminal and terminal bands; a terminal punctiform line; underside with black discoidal spot.

♀. Head, thorax, and fore wing with the ground-colour black, not purplish brown; the last with the white markings more prominent; the postmedial line much more excurved beyond cell and less approximated to reniform.

Hab. Canada, 1 ♂ type; U.S.A., Eastern, Middle, and Central States, New York (*Bruce*), 1 ♀. *Exp.* 44 millim.

2349. Psaphida thaxteriana. (Plate CI. fig. 19.)

Dicopis thaxterianus, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 196 (1874); Smith, Cat. Noct. N. Am. p. 111.

Head and thorax black-brown mixed with grey; patagia whiter; tarsi ringed brown and white; abdomen grey irrorated with brown, the dorsal crests dark. Fore wing dark brown mixed with grey-white, the terminal area grey-white; a slight black streak below base of cell and a streak in cell to the antemedial line, which is strong, black defined by grey on inner side, incurved in submedian interspace and excurved towards inner margin; orbicular and reniform grey defined by black and with slight dark marks in centres, the former round, the latter rather quadrate; an indistinct irregularly sinuous medial line; postmedial line black defined by grey on outer side, strongly bent outwards below costa, incurved at discal fold, strongly incurved and somewhat dentate below vein 4; subterminal line closely approximated to the postmedial line, only represented by the contrast between the brown and grey terminal area; cilia brown and grey. Hind wing grey suffused with reddish brown; traces of diffused postmedial and subterminal lines; the underside grey tinged with brown and irrorated with large brown scales, postmedial line diffused, excurved from costa to vein 4, then incurved.

Hab. U.S.A., Massachusetts, in U.S. Nat. Mus., Pennsylvania, Lucerne Co., 1 ♂, Texas. *Exp.* 30 millim.

Larva. Dyar, Journ. N.Y. Ent. Soc. ix. p. 84 (1901).

Head luteous brown, dotted with whitish, with curved brown lines and a shade on the angle of each lobe. Body vinous brown, a series of segmentary subdorsal white patches, somewhat trilobate, covering tubercles i. to iii. Tubercles, spiracles, and anal plate white. Food-plant, Oak.—H. G. D.

*2350. Psaphida electilis.

Dicopis electilis, Morr. Proc. Bost. Soc. Nat. Hist. xviii. p. 114 (1875); Smith, Cat. Noct. N. Am. p. 111.

Head and thorax grey; patagia with two white bands, black on outer side; abdomen short, dark. Fore wing cinereous grey; a strong black streak below base of cell through the claviform to

postmedial line; antemedial line obsolete; claviform, orbicular, and reniform indistinctly defined by black; postmedial line fine, black, angled inwards at discal fold and incurved below vein 4; subterminal line blackish, obsolescent. Hind wing pale grey; the underside with discoidal point.

Hab. U.S.A., Pennsylvania, Easton. *Exp.* 37 millim.

This species is unknown to me, as the antennæ are described as serrate: the type is probably a female, not a male; the abdomen is described as "not untufted" (?not tufted).

Genus EUTOLYPE.

	Type.
Eutolype, Grote, Proc. Ac. Nat. Sci. Phil. xxvi. p. 198 (1874).....	*rolandi.*

Proboscis rather slight; palpi porrect to just beyond frons and fringed with long hair below; frons smooth, rounded; eyes large, rounded; antennæ of male bipectinate, the branches decreasing in length to base and apex, of female minutely serrate; fore tibia short and broad with corneous process and long curved claw on inner side at extremity; the tarsi with tufts of hair at the joints; head and thorax clothed with hair and hair-like scales, the pro- and metathorax with slight spreading crests; abdomen with some rough hair at base, but without crests. Fore wing rather narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of disco-cellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

A. Fore wing with white lunule on subterminal line in submedian interspace.
  a. Fore wing with black streak from base confluent with lower edge of claviform ..... *bombyciformis.*
  b. Fore wing without black streak from base ..... *depilis.*
B. Fore wing without white lunule on subterminal line.
  a. Fore wing purplish grey suffused with red-brown.
    a^1. Fore wing with the medial shade prominent, oblique, and with brown suffusion beyond it ..... *grandis.*
    b^1. Fore wing with the medial shade slight, sinuous ... *rolandi.*
  b. Fore wing blue-grey without brown suffusion ..... *damalis.*

2351. Eutolype bombyciformis. (Plate CI. fig. 20.)

Eutolype bombyciformis, Smith, Proc. U.S. Nat. Mus. xv. p. 59 (1892); id. Cat. Noct. N. Am. p. 112.

♀. Head and thorax fuscous brown mixed with grey; patagia edged with black on outer side and at tips; metathorax black; tarsi ringed with black; abdomen grey irrorated with black. Fore wing grey irrorated and suffused with fuscous brown; subbasal line represented by a black striga from costa; antemedial line oblique, waved; a black streak from base confluent with lower edge of claviform, which is defined by black, broad, and extending up to median nervure, some white in its extremity; orbicular and reniform whitish with some brown in centres, only defined by a few black scales, the former round; a slight medial shade; postmedial line with black striga at costa, then indistinct, bent outwards below costa, angled inwards in discal fold, outwardly oblique to

vein 4, then black, with some white on its outer edge, minutely waved and double below vein 2; cilia chequered whitish and black. Hind wing whitish thickly irrorated with brown, the inner area rather paler; the underside whiter, a small discoidal spot and indistinct curved postmedial line.

Hab. U.S.A., Massachusetts to Missouri, Pennsylvania, New Brighton (*Merrick*), 1 ♀. *Exp.* 38 millim.

*2352. Eutolype depilis. (Plate CI. fig. 21.)

Dicopis depilis, Grote, Papilio, i. p. 48 (1881); Smith, Cat. Noct. N. Am. p. 112.

♀. Head and thorax grey mixed with dark reddish brown; tarsi ringed red-brown and white; abdomen yellow-brown mixed with grey. Fore wing grey slightly suffused and irrorated with dark brown; an indistinct oblique slightly waved antemedial line with dark shade before it above inner margin; orbicular round, slightly defined by black; reniform defined by black on inner side, the cell between them somewhat darker; postmedial line very indistinct, diffused, slightly angled outwards below costa and at vein 4, then strongly incurved; subterminal line whitish, defined on inner side by slight dark suffusion, incurved at discal fold and below vein 4, forming a whitish lunule in submedian interspace; cilia fuscous. Hind wing whitish, the veins and terminal area slightly tinged with red-brown; cilia red-brown, white at tips; the underside with the costal area irrorated with brown, a small discoidal spot.

Hab. U.S.A., New York to Ohio, Texas, in U.S. Nat. Mus. *Exp.* 42 millim.

2353. Eutolype grandis. (Plate CI. fig. 22.)

Eutolype grandis, Smith, Can. Ent. xxx. p. 321 (1898); Dyar, Cat. Lep. N. Am. p. 127.

♀. Head and thorax purplish grey mixed with brown; abdomen reddish brown. Fore wing purplish grey irrorated with reddish brown; the basal area and costal area to subterminal line suffused with reddish brown; subbasal line absent; antemedial line indistinct, very oblique from costa to just above inner margin where it is angled outwards; claviform, orbicular, and reniform absent; a diffused oblique dark medial line with brown suffusion beyond it extending to postmedial line and on costal area to subterminal line; postmedial line very indistinct, greyish, bent outwards below costa and incurved below vein 4; subterminal line indistinct, brownish, diffused, parallel to termen; cilia brown. Hind wing dull reddish brown with indistinct diffused sinuous postmedial line; a fine dark terminal line; cilia brown mixed with grey; the underside grey-white irrorated with brown, a slight discoidal spot and indistinct postmedial line excurved to vein 4, then incurved.

Hab. U.S.A., Missouri (*Hall*), 1 ♀. *Exp.* 44 millim.

2354. Eutolype rolandi.

Eutolype rolandi, Grote, Proc. Ac. Nat. Sci. Phil. xxvi. p. 198 (1874); Smith, Cat. Noct. N. Am. p. 112.
Copipanolis vernalis, Morr. Proc. Bost. Soc. Nat. Hist. xvii. p. 133 (1874).

♂. Head and thorax fuscous brown mixed with grey; pro- and metathorax with the crests formed of scales with a metallic gloss; tarsi with dark rings; abdomen grey mixed with brown. Fore wing grey slightly suffused and irrorated with brown; subbasal line represented by a brown point in cell; antemedial line indistinctly double, oblique, waved; claviform defined by black except above, very broad and extending up to median nervure; orbicular and reniform large, defined by black at sides and open above and below, the former round, the latter rather quadrate; a

Fig. 62.—*Eutolype rolandi*, ♂. ½.

slight sinuous medial shade; postmedial line very indistinct, bent outwards below costa, then dentate, approximated to reniform, and below vein 4 bent inwards below it; subterminal line represented by a series of small dentate dark marks, angled outwards at vein 7, excurved at middle, and angled inwards at submedian fold; a terminal series of slight dark lunules; cilia grey with some fuscous at tips. Hind wing grey-white slightly suffused and irrorated with brown; a fine dark terminal line; the underside with small discoidal spot.

♀. Much darker fuscous brown; abdomen and hind wing fuscous brown.

Hab. U.S.A., 1 ♂, 1 ♀ type, Massachusetts, Missouri, Texas. *Exp.* 40 millim.

2355. Eutolype damalis. (Plate CI. fig. 23.)

Eutolype damalis, Grote, Bull. U.S. Geol. Geog. Surv. Terr. v. p. 208 (1880); Smith, Cat. Noct. N. Am. p. 112.

♀. Head, thorax, and abdomen blue-grey mixed with fuscous; tarsi with dark rings. Fore wing blue-grey faintly irrorated with brown; the markings extremely indistinct; traces of a dark streak below base of cell; traces of a double waved antemedial line; claviform slightly defined by black at extremity; orbicular and reniform on inner side faintly defined by black, the former round; traces of a waved medial line; traces of a double postmedial line, bent outwards below costa, then waved, strongly incurved below vein 4; traces of a subterminal series of slight dentate dark marks; a fine

dark terminal line. Hind wing white, the marginal areas sparsely irrorated with black; a lunulate terminal line; the underside with prominent black discoidal spot.

Hab. U.S.A., California, Havilah, 1 ♀. *Exp.* 40 millim.

Genus COPIPANOLIS.

Type.

Copipanolis, Grote, 6th Rep. Peab. Acad. Sci. p. 25 (1874) ..... *cubilis.*

Proboscis aborted, minute; palpi porrect to just beyond frons and clothed with long hair; frons smooth; eyes large, rounded; antennæ of male bipectinate with long branches to apex; head and thorax clothed with long rough hair and without crests; fore tibia with corneous process at extremity and long curved claw on inner side; tarsi with tufts of hair on the joints; abdomen with rough hair at base but without crests. Fore wing rather narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the ante- and postmedial lines more or less distinct.
  a. Fore wing with the orbicular and reniform whitish, contrasting ..... *cubilis.*
  b. Fore wing with the orbicular and reniform concolorous, slightly defined by brown.
    a'. Head, thorax, and medial area of fore wing deep red-brown ..... *borealis.*
    b'. Head, thorax, and medial area of fore wing concolorous.. *fasciata.*
B. Fore wing with the ante- and postmedial lines hardly traceable ..... *stigma.*

2356. Copipanolis cubilis.

Copipanolis cubilis, Grote, 6th Rep. Peab. Acad. Sci. p. 25 (1874); id. Bull. Buff. Soc. Nat. Sci. ii. p. 77, pl. 1. f. 6; Smith, Cat. Noct. N. Am. p. 112.

♂. Head and thorax bright rufous; antennæ with the shaft whitish; abdomen fuscous, clothed with grey hair, the anal tuft white. Fore wing greyish, more or less completely suffused with bright rufous, leaving the terminal area and sometimes also the

Fig. 63.—*Copipanolis cubilis*, ♂. ½.

basal and subcostal areas greyer; a rather diffused rufous antemedial line excurved from submedian fold to inner margin; orbicular and reniform whitish, defined by rufous, the former

round; postmedial line rather diffused, defined by greyish on outer side, bent outwards below costa, oblique and slightly curved to vein 2, then erect, with a very ill-defined rufous shade beyond it, forming a more distinct patch at costa. Hind wing grey-white irrorated and suffused with reddish brown; the underside with small discoidal spot and curved postmedial line.

Hab. U.S.A., Massachusetts, Miller's Falls (*Thacker*), 2 ♂, Michigan, Lansing, 1 ♂ type. *Exp.* 36–40 millim.

*2357. Copipanolis borealis. (Plate CI. fig. 24.)

Copipanolis borealis, Smith, Pr. U.S. Nat. Mus. xv. p. 62 (1892); id. Cat. Noct. N. Am. p. 112.

♂. Head and thorax deep red-brown; antennæ fulvous; pectus with some whitish hair; abdomen black-brown with some greyish hair, the anal tuft rufous. Fore wing grey thickly irrorated with red-brown, the medial area redder; subbasal line absent; antemedial line ill-defined, oblique from costa to submedian fold, then slightly incurved; orbicular absent; reniform very faintly defined by red-brown; postmedial line strong, red-brown, strongly bent outwards below costa, oblique to vein 3, then strongly incurved; subterminal line absent. Hind wing grey-white thickly irrorated with pale red-brown; an indistinct oblique postmedial line, more prominent on underside and bent inwards to costa.

Hab. Canada, Minnesota, St. Anthony's Park, in Coll. J. B. Smith. *Exp.* 34 millim.

2358. Copipanolis fasciata. (Plate CI. fig. 25.)

Copipanolis fasciata, Smith, Pr. U.S. Nat. Mus. xv. p. 62 (1892); id. Cat. Noct. N. Am. p. 113.

♂. Head and thorax bright rufous; basal joint of antennæ with white hair; hair of pectus and femora white; tarsi with white rings; abdomen fuscous above, the anal tuft and ventral surface grey-white. Fore wing bright rufous finely irrorated with white; a rather indistinct waved dark rufous antemedial line; orbicular and reniform greyish defined by dark rufous, the former very small, round; the postmedial line prominent, dark rufous, oblique from costa to vein 6, then incurved to vein 4, then strongly incurved and minutely dentate at veins 3 and 2. Hind wing dull white, the terminal half tinged with pale rufous; the underside irrorated with rufous, a discoidal spot and curved postmedial line.

Hab. U.S.A., Missouri, Texas, 1 ♂. *Exp.* 38 millim.

*2359. Copipanolis stigma.

Copipanolis stigma, Smith, Ent. Am. vi. p. 220 (1890); id. Cat. Noct. N. Am. p. 113.

♂. Head and thorax deep brick-red; palpi paler. Fore wing deep brick-red slightly mixed with yellowish scales, especially on

costal area; subbasal line absent; ante- and postmedial lines hardly traceable; orbicular and reniform yellowish white, the former small, round, the latter moderate, rather irregular. Hind wing whitish at base, then irrorated with rufous, especially on terminal area; the underside slightly paler and more irrorated with yellow.

Hab. U.S.A., Florida. *Exp.* 29 millim. This species is unknown to me.

Genus **EPIDEMAS.**

Type.
Epidemas, Smith, Trans. Am. Ent. Soc. xxi. p. 40 (1894) ..... *cinerea.*

Proboscis absent; palpi short, upturned, clothed with long hair in front; frons smooth, rounded; eyes large, rounded; antennæ of male strongly serrate and fasciculate; head and thorax clothed with rough hair and scales, the pro- and metathorax with spreading crests; abdomen with dorsal crest at base only and lateral fringes of hair. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle or from areole, which is formed by vein 9 given off from 10 and anastomosing with 8; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

A. Fore wing with the subterminal line strong, white defined on inner side by dentate black marks ..... *melanographa.*
B. Fore wing with the subterminal line indistinct, not defined by dentate black marks on inner side.
a. Fore wing with the postmedial and subterminal lines defined by white on outer side towards inner margin. *cinerea.*
b. Fore wing with the postmedial and subterminal lines not defined by white on outer side towards inner margin. *obscura.*

2360. Epidemas melanographa, n. sp. (Plate CI. fig. 26.)

♀. Head and thorax grey-white mixed with dark brown; palpi blackish at sides; thorax with dark line behind tegulæ; patagia with blackish scales near upper edge, metathoracic crest tipped with blackish; tarsi with slight pale rings; abdomen reddish brown mixed with greyish. Fore wing grey-white irrorated and in places suffused with black-brown; a sinuous black streak below base of cell with some ochreous scales above and below its extremity; subbasal line represented by double black striæ from costa; antemedial line black defined by white on inner side, angled outwards below costa, then oblique to submedian fold; claviform whitish, acute, and defined by black at extremity; orbicular and reniform whitish, the former oblique elliptical, strongly defined by black, the latter defined by black on inner side, undefined on outer; medial shade strong, black, diffused, darkening the cell between the stigmata, then approximated to postmedial line, which is black defined by white on outer side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line strong, white, defined on inner side by dentate black marks, angled outwards at veins 7, 4, 3, and bent outwards to tornus; a terminal series of small black lunules; cilia fuscous brown mixed with whitish. Hind wing

whitish irrorated with brown, a dark terminal line; the underside with dark discoidal lunule and indistinct curved postmedial line.

Hab. Canada, Vancouver I. (*J. J. Walker*), 1 ♀ type. *Exp.* 40 millim.

2361. Epidemas cinerea.

Epidemas cinerea, Smith, Trans. Am. Ent. Soc. xxi. p. 41, pl. iv. ff. 10, 12 (1894); Dyar, Cat. Lep. N. Am. p. 119.

Head and thorax grey mixed with black; tegulæ with blackish medial line and black tips; patagia edged with black; metathoracic crest black at tips; tarsi blackish ringed with white;

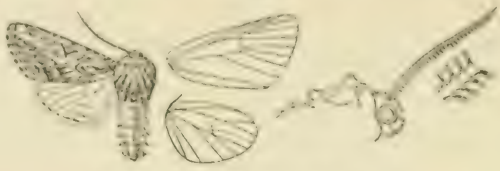


Fig. 64.—*Epidemas cinerea*, ♂. ½.

abdomen brownish grey irrorated with brown. Fore wing grey thickly irrorated with black and tinged with brown in parts; a sinuous black streak below base of cell; subbasal line represented by a slight striga from costa; antemedial line double, filled in with whitish, the inner line indistinct, angled inwards on subcostal nervure and vein 1 and strongly excurved in submedian interspace; claviform defined by black, acute at extremity and extending to postmedial line; orbicular and reniform with whitish annuli defined by black, the former oblique elliptical, sometimes open above and below, the latter indistinctly defined on outer side; postmedial line double, filled in with white, bent outwards below costa and incurved below vein 4; subterminal line defined by the area beyond it being slightly darker, dentate on veins 7, 6, 4, 3, then forming a white line defined on each side by black; cilia chequered grey and black with a fine line through them. Hind wing white irrorated with brown; a fine dark terminal line; the underside with discoidal spot and curved postmedial line.

Hab. U.S.A., Washington, Pullman (*Piper*), 1 ♀, Colorado, Glenwood Springs (*Barnes*), 1 ♂. *Exp.*, ♂ 36, ♀ 40 millim.

2362. Epidemas obscura. (Plate CI. fig. 27.)

Epidemas obscura, Smith, J. N.Y. Ent. Soc. xi. p. 2 (1903).

♂. Head and thorax grey mixed with dark brown; abdomen pale suffused with reddish brown. Fore wing pale, almost uniformly suffused with reddish brown and with slight dark irroration; a curved black streak below base of cell; subbasal line absent; antemedial line very indistinct, excurved from costa to submedian fold, then angled inwards on vein 1; claviform small, indistinctly

defined by a few black scales; orbicular small, incompletely defined by black, oblique elliptical; reniform defined by black on inner side only; postmedial line indistinct, double, strongly bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of indistinct dark points in the interspaces; a terminal series of slight dark lunules; cilia chequered fuscous and pale brown. Hind wing white irrorated with pale brown, a slight discoidal spot, indistinct curved postmedial line and fine dark terminal line; the underside with the costal and terminal areas irrorated with brown, the discoidal spot blackish, the postmedial line more distinct.

Hab. U.S.A., Washington, Pullman (*Doane*), 1 ♂. *Exp.* 36 millim.

Genus **BOMBYCIA.**

Type.

Bombycia, Steph. Ill. Brit. Ent., Haust. iii. p. 57 (1829), nec Hübn. Tent. ined. ..... *viminalis.*
Cleoceris, Boisd. Ind. Meth. p. 93 (1840) ..... *viminalis.*

Proboscis fully developed; palpi obliquely porrect, fringed with long hair below; frons smooth; eyes rather small, rounded; antennæ of male typically bipectinate, with short branches, the apical part serrate; head and thorax clothed with hair and hair-like scales, the pro- and metathorax with spreading crests; pectus and tibiæ clothed with long hair; abdomen with dorsal crests on basal segments and lateral fringes of hair towards extremity. Fore wing rather long and narrow, the apex somewhat produced and acute, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with rather long branches, almost to apex.

A. Fore wing with the reniform angled inwards on median nervure ..... *curvifascia.*
B. Fore wing with the reniform not angled inwards on median nervure.
a. Fore wing with the orbicular moderate, elliptical ..... *elda.*
b. Fore wing with the orbicular as large as reniform and rather quadrate ..... *onychina.*

2363. **Bombycia curvifascia.** (Plate CI. fig. 28.)

Dryobota curvifascia, Smith, Trans. Am. Ent. Soc. xviii. p. 109 (1891); id. Cat. Noct. N. Am. p. 215.

♀. Head, thorax, and abdomen grey mixed with black; tegulæ with slight reddish tinge at base and black medial line; patagia with blackish line near edges; tarsi black ringed with white. Fore wing grey slightly tinged with brown, and irrorated and suffused with fuscous; a sinuous black streak below base of cell; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line indistinctly double, waved, somewhat oblique; claviform represented by a small diffused dark patch; orbicular and

reniform whitish, defined by black, and with some fuscous irroration in centre, the former oblique elliptical, the latter angled inwards on median nervure; an indistinct diffused waved medial line; postmedial line bent outwards below costa, then waved, below vein 4 incurved to below inner edge of reniform, some white points beyond it on costa and slight black streaks on the veins; subterminal line whitish, defined by brown on inner side and with some black before and beyond it in submedian interspace, angled outwards at vein 7 and excurved at middle, the veins beyond it streaked with blackish; a terminal series of small black lunules; cilia whitish and fuscous with a dark line through them. Hind wing whitish suffused and irrorated with brown; a diffused subterminal band and dark terminal line; cilia white with a dark line through them; the underside with dark discoidal lunule and curved postmedial line showing through to upperside.

Hab. U.S.A., California, Sierra Nevada, Placer Co., Mt. Shasta, 1 ♀. *Exp.* 34 millim.

2364. Bombycia elda.

Homohadena elda, French, Can. Ent. xix. p. 5 (1887); Smith, Cat. Noct. N. Am. p. 215.

♂. Head and thorax grey mixed with dark brown; frons with blackish bar; tegulæ with dark lines at middle and near tips; tarsi blackish ringed with white; abdomen grey irrorated with fuscous and dorsally suffused with brown. Fore wing grey irrorated with fuscous and suffused in parts with brown; a sinuous black streak

Fig. 65.—*Bombycia elda*, ♂. ½.

below base of cell, with a whitish patch above it; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line double filled in with whitish, slightly sinuous and somewhat oblique; claviform minute, defined by a few black scales; orbicular and reniform whitish irrorated with brown, the former defined by black bars at sides, open above and below, the latter defined by black except below; traces of an oblique medial line; postmedial line defined by whitish on outer side, bent outwards below costa, then dentate and produced to slight streaks on the veins, below vein 4 incurved to below lower edge of reniform, some white points beyond it on costa; subterminal line whitish, slightly defined by brown on inner side and with blackish patch beyond it in submedian interspace, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black striæ;

cilia whitish and brown with a dark line through them. Hind wing white irrorated with brown, especially on terminal area; a fine brown terminal line; cilia white with a slight brown line through them; the underside with dark discoidal lunule and slight postmedial line with minute streaks on the veins.

Hab. U.S.A., California, Sierra Nevada, 1 ♂. *Exp.* 34 millim.

*2365. Bombycia onychina.

Epunda onychina, Guen. Noct. ii. p. 48 (1852); Smith, Cat. Noct. N. Am. p. 215.

Similar in size and colour to *B. viminalis*. Fore wing rather greyer with the markings similar; the orbicular much larger and at least equal in size to the reniform, somewhat quadrate and with its centre slightly defined by black; the reniform partly suffused with rufous; subterminal line represented by three large dark quadrate patches, on costa, at middle, and at tornus.

Hab. U.S.A. *Exp.* 32 millim. This species is unknown to me; it may belong to the genus *Brachylomia*.

Larva. Grey marbled with rufous; a dorsal series of small black V-shaped marks between the joints; stigmatal line broad, white with a reddish line through its middle; head shining rufous. Food-plant, *Chamecistus*.

Sect. II. Antennæ of male bipectinate with short branches, the apical part serrate.

2366. Bombycia viminalis.

Noctua viminalis, Fabr. Gen. In. p. 284 (1777); Dup. Lép. Fr. vi. p. 177, pl. 84. f. 4; Steph. Ill. Brit. Ent., Haust. iii. p. 58; Staud. Cat. Lep. pal. p. 164.
Noctua stricta, Esp. Schmett. iii. pl. 84. f. 5 (1787).
Noctua saliceti, Borkh. Eur. Schmett. iv. p. 630 (1792).
Noctua scripta, Hübn. Eur. Schmett., Noct. f. 50 (1827).
Bombycia obscura, Staud. Cat. Lep. pal. p. 164 (1871).
Bombycia asiatica, Bang-Haas, ined.

Head and thorax grey-white tinged with red-brown; frons dark brown below; antennæ brown except at base; tegulæ with black line near tips, which are brown; patagia edged with blackish on

Fig. 66.—*Bombycia viminalis*, ♂. ½.

outer side; tarsi reddish brown ringed with white; abdomen whitish tinged with rufous, the dorsal crests dark. Fore wing grey-white suffused in parts with red-brown; the costal edge rufous; a sinuous black streak below base of cell; subbasal line

represented by two brown striæ from costa, with an oblique black streak across cell just beyond them; antemedial line double at costa, then single, oblique to submedian fold and angled inwards on vein 1; claviform elongate, slightly defined by black; orbicular round, white defined by black and with brown centre; reniform whitish, defined on inner side by a black bar, undefined on outer; a diffused medial brown line excurved in cell; postmedial line indistinct, bent outwards below costa, bent inwards at vein 4 to below lower edge of reniform, then black and prominent, some white points beyond it on costa, and slight black streaks on the veins; subterminal line whitish, slightly defined by rufous on inner side, and with rufous patch before it on costa, slightly angled outwards at vein 7 and excurved at middle, with slight dark streaks beyond it on the veins; a terminal series of small black lunules; cilia tinged with pale rufous and with dark line through them. Hind wing whitish suffused with pale red-brown; cilia white; the underside white, the costal area suffused with red, a small discoidal spot, sinuous postmedial line, and slight diffused subterminal band.

Ab. 1. Fore wing with the basal half suffused with red-brown.

Ab. 2. *obscura*. Very much darker and suffused with grey-brown or black-brown; fore wing with the markings indistinct.

Ab. 3. *asiatica*. Grey and fuscous without any brown tinge.—Siberia.

Hab. Britain, Leech Coll. (*Barrett*); France; Germany, Zeller and Leech Colls.; Austria, Zeller and Frey Colls.; Hungary; Switzerland, Zeller and Frey Colls.; N. Italy; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; W. Siberia, Sajan, 1 ♂, 1 ♀, Altai; E. Siberia, Kentei, Amurland. *Exp.* 30–34 millim.

Larva. Meyr. Brit. Lep. p. 53; Barrett, Lep. Brit. iv. p. 316, pl. 171. f. 2.

Whitish green; dorsal, subdorsal, and spiracular lines white, indistinct. Food-plant, *Salix*. 5–6.

Genus **BRACHYLOMIA**, nov.

Type, *B. populi*.

Proboscis fully developed; palpi porrect, hardly reaching beyond frontal tuft and fringed with long hair below; frons smooth; eyes rather small, somewhat reniform; antennæ of male strongly serrate, the apical part simple; head and thorax smoothly clothed chiefly with scales, the pro- and metathorax with slight spreading crests; pectus clothed with long hair; abdomen with dorsal crest at base only and with tufts of hair from lateral stigmata. Fore wing rather short and broad, the apex rectangular, the termen curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line excurved to well beyond reniform.
  a. Fore wing with the subterminal line defined by fuscous on outer side ..... *populi*.
  b. Fore wing with the subterminal line defined by fuscous on inner side ..... *rectifascia*.
B. Fore wing with the postmedial line approximated to outer edge of reniform..... *discolor*.

2367. Brachylomia populi.

Cleoceris populi, Streck. Lep. Rhop. & Het., Suppl. i. p. 8 (1898); Dyar, Cat. Lep. N. Am. p. 168.

Head and thorax grey-white mixed with fuscous; tegulæ with orange-fulvous band near base and blackish band near tips; fore tarsi banded with black; abdomen brownish grey irrorated with fuscous. Fore wing grey-white, thickly irrorated with black and suffused with orange-fulvous at base of costal area and on medial and postmedial areas; subbasal line indistinct, defined by whitish

Fig. 67.—*Brachylomia populi*, ♂. ½.

on outer side, irregular, from costa to submedian fold; antemedial line defined by fulvous on inner side, erect, slightly waved; orbicular and reniform undefined, fulvous with some grey and black in centres, the former elliptical, the latter narrow; traces of a diffused medial line; postmedial line very indistinct, bent outwards below costa and incurved below vein 4 to inner edge of reniform; subterminal line indistinct, pale, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia with a dark line through them. Hind wing white tinged with pale red-brown; a fine brown terminal line; cilia white; the underside with slight discoidal lunule and curved diffused postmedial line.

Ab. 1. Whiter; fore wing with the fulvous suffusion slight, a diffused blackish medial band; hind wing whiter.

Ab. 2. Thorax blackish; fore wing with hardly a trace of fulvous suffusion, the basal half blackish bounded by a strong black medial band; hind wing whiter.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 3 ♂, 2 ♀; U.S.A., Colorado. *Exp.* 34 millim.

*2368. Brachylomia rectifascia. (Plate CI. fig. 29.)

Dryobota rectifascia, Smith. Trans. Am. Ent. Soc. xviii. p. 108 (1891); id. Cat. Noct. N. Am. p. 215.

Head and thorax blue-grey; tegulæ with broad black medial line. Fore wing blue-grey; subbasal line distinct, pale, obscurely double, ending at the short black streak below base of cell, the base of costa paler, tinged with rufous; antemedial line erect or slightly oblique, double, the outer line strong and touching the orbicular; claviform small, represented by a slight reddish tinge; reniform large, suffused with brick-red; medial line prominent, black, forming the inner

edge of reniform; postmedial line double, the inner line more distinct, filled in with whitish, slightly bent outwards below costa, excurved to vein 4, then incurved; postmedial area pale except at costa, darkening to form a shade mixed with reddish scales, especially towards inner margin, on inner edge of the pale irregularly sinuous subterminal line; a dark line at base of cilia, which have a dark line through them. Hind wing dirty white, the veins and terminal area fuscous, the underside whitish with some dark irroration, a discoidal spot and more or less complete postmedial line.

Hab. U.S.A., California, Sierra Nevada. *Exp.* 31–35 millim. This species is unknown to me; figured from drawing from type in U.S. Nat. Mus.

*2369. Brachylomia discolor. (Plate CI. fig. 30.)

Cleoceris discolor, Smith, Psyche, xi. p. 55 (1904).

♀. Head clothed with black and white hair and scales, with a slight white line between antennæ; tegulæ with the base ochreous the terminal half mottled black and white; middle of patagia and thorax grey mixed with ochreous; abdomen pale ochreous. Fore wing ochreous, the outer half of basal area suffused with black except below cell and towards inner margin; antemedial line indistinct, erect; medial area black mixed with ochreous towards costa; claviform filled in with ochreous; orbicular and reniform ochreous, the former with some dark scales in centre, small, round, the latter oblong erect with dark line in centre; postmedial line indistinct, slightly bent outwards below costa and approximated to outer edge of reniform, incurved below vein 4; postmedial area black, extending on costa to subterminal line, narrowing to a point beyond postmedial line towards inner margin; subterminal line interrupted, black, somewhat diffused and irregular; terminal area irrorated with black; a series of small black terminal lunules. Hind wing whitish; a slight brown postmedial line; the terminal area suffused with brown with a paler subterminal line; cilia whitish; the underside glossy grey.

Hab. U.S.A., New Mexico, Taos. *Exp.* 31 millim. This species is unknown to me; figured from a drawing from type in Coll. J. B. Smith.

Genus LITHOLOMIA.

	Type.
Litholomia, Grote, Can. Ent. vii. p. 206 (1875)	*napæa*.

Proboscis fully developed; palpi short, porrect, clothed with long hair; frons smooth, rounded; eyes rather small, round; antennæ of male ciliated, the shaft slightly thickened with scales at base; head and thorax clothed with hair and hair-like scales, the vertex of head crested, the pro- and metathorax with slight spreading crests; pectus clothed with long hair; abdomen with some rough hair at base of dorsum, but without crests. Fore wing with the apex rectangular, the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole;

11 from cell. Hind wing with veins 3, 4 stalked or from cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked; 8 anastomosing with the cell near base only.

A. Fore wing grey thickly irrorated with fuscous; hind wing with the cilia tinged with brown .... *napæa.*
B. Fore wing grey-white slightly irrorated with fuscous; hind wing with the cilia wholly white ..... *dunbari.*

2370. Litholomia napæa.

Scapelosoma napæa, Morr. Proc. Bost. Soc. N. H. xvii. p. 152 (1874); Grote, Can. Ent. vii. p. 206; Smith, Cat. Noct. N. Am. p. 226.

Head and thorax grey mixed with black; antennæ tinged with rufous towards tips; tegulæ with black medial line and black tips; tarsi black ringed with white; abdomen grey tinged with brownish fuscous. Fore wing grey thickly irrorated with fuscous; a black subbasal line from costa to submedian fold; antemedial line double, the inner line indistinct, the outer black, waved; claviform defined by black above at extremity; orbicular and reniform with fuscous centres and whitish annuli, defined by black, the former elliptical; a brownish-black medial line slightly excurved from costa to median

Fig. 68.—*Litholomia napæa*, ♂. ½.

nervure, then slightly excurved; postmedial line double, produced to slight streaks on the veins, oblique from costa to vein 6, incurved at discal fold and below vein 4; subterminal line waved, white, strongly defined by fuscous on inner side and slightly on outer, slightly angled outwards at vein 7 and excurved at middle; a fine waved terminal black line. Hind wing pale uniformly suffused with fuscous; a fine dark terminal line; cilia tinged with brown; the underside whitish irrorated with fuscous, a black discoidal lunule and curved postmedial line.

Hab. Canada, Manitoba, Russell (*H. R. Smith*), 2 ♂, 1 ♀, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 1 ♀; U.S.A., Northern and Eastern States, 1 ♂, Massachusetts, New York, Colorado (*Bruce*), 1 ♂, California. *Exp.* 32–34 millim.

2371. Litholomia dunbari. (Plate CI. fig. 31.)

Hadena dunbari, Harv. Can. Ent. viii. p. 52 (1876); Smith, Cat. Noct. N. Am. p. 226.

Head and thorax white slightly mixed with fuscous; tegulæ with slight dark medial line and line near tips; tarsi black ringed with

white; abdomen grey tinged with brown. Fore wing grey-white slightly irrorated with fuscous; a black subbasal line from costa to submedian fold; antemedial line double, the inner line indistinct, the outer prominent, waved; claviform defined by black above at extremity; orbicular white, defined by black at sides, open above and below; reniform with fuscous centre and white annulus defined by black; medial line prominent, black, with a faint rufous tinge beyond it, slightly incurved from costa to median nervure, then slightly excurved; postmedial line double, produced to slight black streaks on the veins, oblique from costa to vein 6, incurved at discal fold and below vein 4; subterminal line ill-defined, whitish, waved, defined by fuscous on inner side, angled outwards at vein 7 and excurved at middle; a waved black terminal line. Hind wing grey tinged with fuscous; the cilia white; the underside whitish irrorated with fuscous, a small discoidal lunule and curved postmedial line.

Hab. CANADA, Vancouver I. (*W. H. Danby*), 3 ♂, 2 ♀. *Exp.* 32–34 millim.

Genus HILLIA.

	Type.
Hillia, Grote, Proc. Am. Phil. Soc. xxi. p. 168 (1883)	*iris.*
Crasia, Auriv. Nord. Fjäril. p. 162 (1891)	*iris.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front; eyes large, rounded; frons with large tuft of hair; antennæ of male typically ciliated; head and thorax clothed with hair and hair-like scales, the vertex of head, pro- and metathorax, and shoulders with well-developed spreading crests; femora and tibiæ fringed with hair; abdomen with some rough hair at base but without crests. Fore wing with the apex rectangular, the termen slightly angled at middle, then oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

SECT. I. Antennæ of male bipectinate with rather short branches ending in a bristle, the apical part serrate.

A. Fore wing suffused with black from near base to near subterminal line ..... *discinigra.*
B. Fore wing not suffused with black ..... *algens.*

2372. Hillia discinigra. (Plate CI. fig. 32.)

Bryophila discinigra, Wlk. ix. 28 (1856); Smith, Cat. Noct. N. Am. p. 148.

♀. Head and thorax black mixed with grey-white; tegulæ whitish, the basal half tinged with ochreous, a strong black medial line and fuscous tips; abdomen ochreous grey mixed with dark brown. Fore wing grey suffused with fuscous black from near base to near subterminal line, the outer edge of the dark suffusion oblique; subbasal line represented by a black striga from costa; an indistinct oblique waved antemedial line; orbicular and reniform slightly defined by black, the former somewhat oblique elliptical

with some grey in its upper part, the latter with grey annulus on inner side; postmedial line indistinct, slightly defined by grey on outer side, bent outwards below costa, then slightly waved, at vein 4 incurved to lower edge of reniform; subterminal line whitish defined by fuscous on inner side, slightly angled outwards at vein 7, excurved at middle and bent outwards to tornus, the area beyond it suffused with fuscous, with darker streaks on the veins; a terminal series of black striæ. Hind wing grey suffused and irrorated with fuscous brown; the underside paler with dark discoidal spot and indistinct curved postmedial line.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♀ type. *Exp.* 38 millim.

2373. Hillia algens.

Hadena algens, Grote, Can. Ent. x. p. 236 (1878); Smith, Cat. Noct. N. Am. p. 147.

Head and thorax grey mixed with fuscous; palpi black at sides; tegulæ with prominent black medial line, sometimes tinged with ochreous at base; tarsi blackish ringed with white; abdomen grey thickly irrorated with fuscous brown. Fore wing grey suffused with fuscous and slightly irrorated with black, the base and submedian fold sometimes with some ochreous; a slight black streak above base of vein 1; subbasal line represented by a black striga from costa; antemedial line indistinct, waved; orbicular and reniform with greyish annuli defined by black, the former somewhat

Fig. 69.—*Hillia algens*, ♂. ½.

oblique elliptical, the latter sometimes with some ochreous on its inner side; traces of a waved medial line; postmedial line bent outwards below costa, then minutely waved and produced to black and white streaks on the veins, below vein 4 incurved to lower edge of reniform; subterminal line grey defined by fuscous, or sometimes olive-brown, on inner side, a darker patch, with grey points on it, before it on costa and a black spot in submedian fold, angled outwards at vein 7 and excurved at middle; a terminal series of black striæ. Hind wing grey suffused with fuscous; the underside rather paler, a slight discoidal lunule, sinuous postmedial line, and diffused subterminal band showing through to upperside.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 4 ♂; U.S.A., Maine, Orono (*Fernald*), 1 ♀ type, New York, Colorado. *Exp.* 32 millim.

Sect. II. Antennæ of male ciliated.

2374. Hillia iris.

Noctua iris, Zett. Ins. Lapp. p. 941 (1840); Staud. Cat. Lep. pal. p. 205.
N[illegible], Herr.-Schäff. Ein. Schmett. ii. p. 361, Noct. ii. 134, 139 (1845); Smith, Cat. Noct. N. Am. p. 147.
Orthosia semisigna, Wlk. xi. p. 748 (1857).
Agrotis erdmanni, Möschl. Stett. ent. Zeit. xxxv. p. 158 (1874).
Hadena senescens, Grote, Can. Ent. x. p. 235 (1878).
Hadena vigilans, Grote, Bull. Geol. Surv. iv. p. 176 (1878).
Orthosia schildei, Staud. Rom. Mém. vi. p. 510 (1892).

Head and thorax deep purple-brown, some of the scales tipped with grey; tegulæ rufous at base with dark medial line and grey tips; pectus and legs grey and brown, the tarsi black ringed with grey; abdomen grey suffused with fuscous, the anal tuft rufous, the ventral surface suffused with purplish. Fore wing fuscous suffused with purplish red and slightly irrorated with white, chiefly on the veins; subbasal line indistinct, waved, from costa to submedian

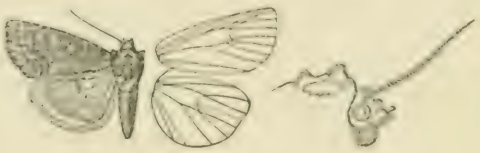


Fig. 70.—*Hillia iris*, ♂. ½.

fold; antemedial line almost obsolete, double, waved; claviform usually represented by a black point at its extremity: orbicular oblique oblong, strongly defined by black at sides and open above and below: reniform strongly defined by black on inner side with white annulus and white lunule in centre; postmedial line only defined by dark suffusion beyond it, bent outwards below costa, excurved to vein 4, then incurved, some pale points beyond in on costa; subterminal line whitish, punctiform, defined by ferruginous on inner side and strongly by black between veins 3 and 1; angled outwards at vein 7 and excurved at middle. Hind wing ochreous grey suffused with fuscous; the underside tinged with purplish red, a discoidal spot, sinuous postmedial line, and subterminal band all showing through to upperside.

Ab. 1. *crassis*. Ground-colour pale grey; tegulæ edged with black; fore wing with purplish-brown suffusion on costal area to subterminal line; the subbasal and antemedial lines double and distinct; orbicular grey with some brown in centre; a brown medial line from cell to inner margin; postmedial line distinct, defined by grey on outer side, minutely dentate and produced to grey and black streaks on the veins; subterminal line with slight dentate blackish marks before it at middle; hind wing greyer.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls

(*Barnston*), 1 ♀, Labrador, Ontario, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 2 ♀; U.S.A., Maine, Orono, 1 ♀ type *vigilans*, New York, Lewis Co. (*W. W. Hill*), 1 ♀ type *senescens*; Sweden; Lapland; hab. ign. 1 ♀ type *semisigna*. *Exp.* 34–38 millim.

Genus **CAFFRISTIS**, nov.

Type, *C. ferrogrisea*.

Proboscis fully developed; palpi obliquely upturned, fringed with long hair in front, the 3rd joint short; frons smooth; eyes large, rounded; antennæ of male bipectinate with short branches, the apical part serrate; head and thorax clothed with hair only, the metathorax with spreading crest; pectus and tibiæ clothed with long hair; abdomen with some rough hair at base and lateral fringes of hair but without crests. Fore wing rather narrow, the apex somewhat produced, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2375. Caffristis ferrogrisea.

Heliophobus ferrogrisea, Hmpsn. Ann. S. Afr. Mus. ii. p. 442 (1902).

♂. Head and thorax grey mixed with fuscous; tegulæ with dark lines at middle and near tips; abdomen grey tinged with reddish brown. Fore wing grey irrorated with fuscous and tinged with reddish brown; subbasal line represented by a slight striga from costa; antemedial line indistinct, waved, somewhat oblique;

Fig. 71.—*Caffristis ferrogrisea*, ♂. ½.

orbicular a small dark spot; reniform a small dark lunule; postmedial line black at costa, then obsolescent, excurved to vein 4, then incurved to lower angle of cell and minutely waved to inner margin; subterminal line very indistinct, dark, slightly sinuous; a terminal series of black striæ. Hind wing grey suffused with reddish brown; a slight brown terminal line; the underside whiter irrorated with brown, a small discoidal spot and indistinct curved postmedial line.

Hab. Basutoland, Masite (*Weigall*), 1 ♂ type, Maseru (*Crawshay*), 1 ♂. *Exp.* 26–30 millim.

Genus DRYOTYPE, nov.

Type, *D. opina*.

Proboscis fully developed; palpi obliquely porrect, the 2nd joint fringed with long hair below, the 3rd moderate; frons with slight rounded prominence roughened in front; eyes large, rounded; antennæ of male bipectinate with long branches, the apical part serrate, of female ciliated; thorax clothed with rough hair and scales, the pro- and metathorax with spreading crests; tibiæ fringed with hair; abdomen with dorsal series of crests and lateral fringes of hair. Fore wing with the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 stalked; 8 anastomosing with cell near base only.

2376. Dryotype opina.

Dryobota opina, Grote, Bull. Geol. Surv. iv. p. 178 (1878); Smith, Cat. Noct. N. Am. p. 156.

♂. Head and thorax clothed with fuscous-brown and grey scales and hair, the patagia with some black scales near upper edge; tarsi with pale rings; abdomen reddish brown with the lateral fringes yellowish. Fore wing purplish brown suffused with fuscous and slightly irrorated with grey; a slight curved subbasal line from costa to submedian fold; antemedial line double at costa, then single, rather oblique, angled inwards on vein 1; claviform moderate, defined by black; orbicular and reniform defined by black and with some whitish irroration in centres, the former round, the latter with some white on outer edge: an indistinct waved medial line, oblique from costa to vein 2; postmedial line strongly defined by purplish red on outer side except at costa, bent outwards below costa, then

Fig. 72.—*Dryotype opina*, ♂. ½.

somewhat dentate, incurved below vein 4 and with some pale points beyond it on costa; subterminal line represented by a series of slight ochreous lunules, defined on inner side by black between veins 7 and 1, forming dentate marks at middle, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of slight black lunules; cilia brown with fine ochreous line at base. Hind wing whitish, the terminal half suffused with brown, a small discoidal spot and curved postmedial line showing through from underside; a dark terminal line; cilia brownish with ochreous line at base; the underside with the costal area irrorated with brown.

♀ darker and duller in colour, the hind wing wholly suffused with fuscous.

Hab. U.S.A., California, Marnie Co, 1 ♂ type, Sanzalito, 1 ♀.

Exp. 36 millim.

Genus **DERTHISA**.

Type.

Derthisa, Wlk. xi. 524 (1857) ..... *scoriacea.*

Proboscis absent; palpi obliquely upturned, the second joint fringed with long hair in front, the third short, porrect; frons with rounded prominence, roughened in front; eyes large, rounded; antennæ of male bipectinate with rather long branches to apex, of female nearly simple; head and thorax clothed with hair and hair-like scales, the pro- and metathorax with spreading crests; tibiæ fringed with long hair; pectus hairy; abdomen with dorsal crest on basal segment. Fore wing with the apex rectangular, the termen obliquely curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

A. Fore wing with the orbicular confluent with a mark below cell.
  a. Fore wing with the orbicular constricted at middle ..... *sareptana.*
  b. Fore wing with the orbicular not constricted at middle.
    a^1. Fore wing with the lower extremity of reniform expanding ..... *trimacula.*
    b^1. Fore wing with the reniform oblique, not expanding at lower extremity.
      a^2. Hind wing more or less tinged with brown ..... *lederi.*
      b^2. Hind wing wholly white ..... *amasina.*
B. Fore wing without mark below orbicular.
  a. Fore wing with the orbicular triangular ..... *antherici.*
  b. Fore wing with the orbicular round.
    a^1. Hind wing white ..... *scoriacea.*
    b^1. Hind wing more or less completely suffused with brown ..... *corsacovi.*

2377. **Derthisa sareptana.** (Plate CII. fig. 1.)

Episema sareptana, Alph. Rom. Mém. ix. p. 213 (1897); Staud. Cat. Lep. pal. p. 177.

♂. Head and thorax dark brown mixed with grey; palpi red-brown at sides, the end of 2nd joint white; pectus and base of legs whitish; tarsi fringed with white; abdomen grey-brown, the ventral surface whitish. Fore wing reddish brown mixed with grey and irrorated with black; subbasal line represented by black striæ from costa and cell; antemedial line black defined by greyish on inner side, oblique, sinuous; orbicular and reniform greyish defined by black at sides, open above and below, irregular, rather constricted at middle and extending to below cell, the cell before and between them deeper brown; postmedial line black defined by greyish on outer side, oblique towards costa, then dentate, angled outwards at veins 6 and 4, then incurved; subterminal line very indistinct, pale, waved, slightly defined by brown on inner side and with more distinct patches at costa and submedian fold; a terminal series of small black lunules; cilia chequered brown and greyish. Hind wing whitish nearly uniformly suffused with brown; the underside uniform brownish white.

Hab. S. Russia, Sarepta, 1 ♂. *Exp.* 32 millim.

2378. Derthisa trimacula.

Bombyx trimacula, Schiff. Wien. Verz. p. 59 (1776); Hübn. Eur. Schmett., Noct. ff. 141–2; Boisd. Icones, pl. 72. f. 1; Frr. Neue Beitr. pl. 401. ff. 5–7; Dup. Lep. Fr. p. 193, pl. 50. f. 3; Herr.-Sch. ff. Eur. Schmett., Noct. ff. 105–7.

Noctua tersa, Schiff. Wien. Verz. p. 312 (1776); Hübn. Eur. Schmett., Bomb. f. 140; Boisd. Icones, pl. 72. ff. 2, 3; Dup. Lep. Fr., Suppl. iii. p. 164, pl. 15. f. 6.

Noctua glaucina, Esp. Schmett. iii. pl. 81. ff. 4, 5 (1789); Staud. Cat. Lep. pal. p. 176.

Noctua dentimacula, Hahn. Beitr. Schmett. ii. pt. 1. p. 13, pl. ii. f. 6 (1827).

Episema hispana, Boisd. Icones, pl. 72. ff. 4, 5 (1832); Dup. Lep. Fr. iii. pl. 16. ff. 1 *a*, *b*; Rmbr. Ann. Soc. Ent. Fr. (2) vi. p. 66; id. Cat. Lep. S. And. pl. 6. f. 4 & pl. 8. f. 1; Oberth. Ét. Ent. xiii. pl. vi. f. 42.

Episema gruneri, Boisd. Icones, pl. 73. ff. 1, 2 (1832); Mill. Ann. Soc. Cannes, 1878, p. 35, pl. 4. ff. 8–10.

Episema unicolor, Dup. Ann. Soc. Ent. Fr. iv. p. 193, pl. 4. f. 1 (1835); id. Lép. Fr., Suppl. iii. p. 166, pl. 15. f. 7.

Episema tersina, Staud. Cat. Lep. pal. p. 95 (1872).

Episema meridionalis, Calb. Iris, i. p. 235 (1884).

Episema albida, Oberth. Ét. Ent. xiii. pl. vi. f. 43 (1890).

Head and thorax ochreous white tinged with brown; palpi black-brown at sides; abdomen ochreous white slightly tinged with brown. Fore wing pale greyish ochreous slightly irrorated with brown; the medial area suffused with brown except costal and inner areas, the veins remaining pale; subbasal line represented by black points below costa and cell; a diffused brown fascia above base of inner margin; the antemedial line obliquely excurved from costa to vein 1, then obsolete; orbicular and reniform very large, ochreous white tinged with red-brown and incompletely defined by black, the former oblique elliptical extending to well below cell and confluent on median nervure with the latter, the cell before and between them and the area beyond and below the reniform dark brown; postmedial line double arising from towards apex, excurved below costa and at middle, incurved at discal fold and below vein 4; subterminal line only defined by the area beyond it being tinged with red-brown, curved and slightly waved; a terminal series of slight brown lunules; cilia greyish tinged with rufous. Hind wing ochreous white tinged with red-brown, especially in female, and with traces of a sinuous postmedial line; the underside whiter.

Ab. 1. *hispana*. Fore wing with the ground-colour tinged with blue.

Ab. 2. *tersina*. Fore wing with the ground-colour ochreous, the dark markings reduced.

Ab. 3. *gruneri*. Fore wing with the ground-colour whitish, the dark markings reduced to two black spots in cell.

Ab. 4. *dentimacula*. Fore wing with the ground-colour brownish, a small black spot between the stigmata and some brown before medial part of postmedial line.

Ab. 5. *glaucina*. Fore wing rufous with the dark markings almost obsolete.

Ab. 6. *unicolor*. Fore wing ochreous with the dark markings almost or quite obsolete.

Hab. FRANCE, Sand and Leech Colls.; GERMANY, Zeller and Leech Colls; AUSTRIA, Zeller Coll.; HUNGARY, Frey and Leech Colls.; SWITZERLAND, Frey and Leech Colls.; SPAIN, Leech Coll.; N. ITALY; SICILY; ALGERIA; RUSSIA, Zeller Coll.; ARMENIA; ASIA MINOR, Pontus; W. TURKESTAN, Issyk Kul. *Exp.* 30–42 millim.

Larva. Kirby, Butt. & Moths, Eur. p. 215; Hffm. Raup. p. 92.

Greyish brown with pale dorsal line; the dorsal plates dark brown; the ventral surface pale grey. Food-plants: *Muscari racemosum*, *Anthericum liliago*, *Ornithogallum*. 5.

*2379. Derthisa lederi.

Episema lederi, Christ. Rom. Mém. ii. p. 44, pl. 3. ff. 1 *a*, *b* (1885); Staud. Cat. Lep. pal. p. 177.
Episema discors, Staud. Iris, iv. p. 274 (1891).
Episema declinans, Staud. Iris, iv. p. 274 (1891).
Episema rubellina, Staud. Iris, iv. p. 274 (1891).
Episema concors, Staud. Iris, iv. p. 274 (1891).

♂. Head and thorax greyish ochreous mixed with pale fuscous; palpi with the second joint blackish brown at sides; fore and mid tarsi fuscous with pale rings, abdomen pale brownish ochreous. Fore wing greyish ochreous slightly irrorated with blackish; subbasal line represented by blackish points below costa and cell; antemedial line black, curved, interrupted below costa and at vein 1, where it is slightly angled inwards; orbicular and reniform defined by black, the former quadrate, defined at sides only and extending well below the cell, the latter open above, rather constricted at middle and angled inwards on median nervure; the cell before and between the stigmata and the area just beyond and below the reniform suffused with brown, the veins remaining pale; postmedial line black, slightly dentate, somewhat angled outwards below costa and incurved at discal fold, strongly incurved below vein 4; traces of a pale minutely waved subterminal line slightly defined by brown on inner side, the area beyond it slightly tinged with brown; a fine waved black terminal line; cilia brownish with slight fuscous spots at tips. Hind wing ochreous white slightly suffused with brown; cilia white, tinged with brown at base; the underside white with traces of diffused postmedial line.

Ab. 1. *discors*, ♂. Head, thorax, and fore wing more ochreous, the last with the stigmata indistinctly defined and without the brown suffusion in cell and beyond and below reniform; subterminal and terminal lines absent; cilia pale rufous.

♀. Head, thorax, and fore wing whiter, indistinct, subterminal and terminal lines present; hind wing white faintly tinged with brown.

Ab. 2. *rubellina*. Fore wing uniform reddish.

Ab. 3. *concors*. Fore wing nearly uniform whitish.

Hab. Armenia; Transcaucasia; Asia Minor, Pontus, Amasia, in Coll. Püngeler; Palestine; W. Turkestan, Turcomania. *Exp.* 30–36 millim.

2380. Derthisa amasina. (Plate CII. fig. 2.)

Episema amasina, Bang-Haas, ined.

♂. Head and thorax white strongly tinged with rufous; palpi blackish at base; abdomen ochreous white. Fore wing ochreous white suffused and irrorated with purplish rufous, the base and costal area to postmedial line whitish; the veins pale; antemedial line ochreous whitish, obliquely excurved from costa to submedian fold, then incurved, bent outwards to inner margin; claviform obsolete; orbicular very faintly defined by red, extending to well below cell; reniform an ochreous-white lunule obscurely defined by red; postmedial line arising from towards apex, ochreous white, slightly incurved at discal fold and oblique below vein 4: subterminal line represented by faint pale scaling. Hind wing white, the veins and base of cilia slightly yellowish.

Hab. Asia Minor, Amasia, 1 ♂. *Exp.* 32 millim.

*2381. Derthisa antherici.

Episema antherici, Christ. Rom. Mém. i. p. 121, pl. 8. ff. 2 *a*, *b* (1884); Staud. Cat. Lep. pal. p. 177.

♀. Head and thorax ochreous white; sides of palpi and frons brownish; abdomen brownish white. Fore wing white slightly tinged with pale red-brown, especially on costal area to subterminal line; the subbasal and antemedial lines absent; the cell suffused with rather deeper red-brown before and between the large stigmata, which are white slightly defined by brown at sides; the orbicular triangular, slightly irregular, the reniform oblique oblong; postmedial line very indistinct double filled in with whitish, slightly excurved below costa, inwardly oblique to vein 4, then obsolete; subterminal line indistinct, whitish, defined on inner side by a fine pale red-brown line slightly angled outwards at vein 7, then oblique and with slight brown suffusion beyond it; a slight red-brown terminal line. Hind wing nearly pure white.

Hab. Persia; W. Turkestan, Turcomania, Askabad in Coll. Püngeler. *Exp.*, ♂ 28, ♀ 36 millim.

Larva. Pale yellow with fine transverse brown striæ; a dorsal brown stripe with irregular edges and the fine pale dorsal line on it; a subdorsal brown stripe with irregular edges and the warts yellow; stigmata ringed with black; substigmatal line interrupted; head pale rufous marbled with red-brown. Food-plant, *Anthericum*. 4.

2382. Derthisa scoriacea.

Bombyx scoriacea, Esp. Schmett. iii. pl. 83. ff. 4, 5 (1786); Frr. Beitr. pl. 141. f. 3; Boisd. Icones, pl. 71. f. 1; Dup. Lép. Fr., Suppl. iii. p. 157, pl. 15. f. 3; Staud. Cat. Lep. pal. p. 177.
Noctua capreæ, Hübn. Eur. Schmett., Noct. f. 19 (1827).

Head and thorax ochreous white mixed with brown; tegulæ with slight dark medial line; tarsi brown with pale rings; abdomen whitish suffused with ochreous brown. Fore wing grey-white suffused in parts with pale rufous and irrorated slightly with brown, the medial area suffused with reddish brown, the veins with slight dark streaks: subbasal line waved, from costa to submedian fold; antemedial line double, obliquely excurved, incurved at vein 1; claviform small, rufous defined by black; orbicular and reniform with whitish annuli defined by black, the former round, its centre

Fig. 73.—*Derthisa scoriacea*, ♂. ½.

suffused by brown, the latter rather produced above with brown lunule in centre followed by a rufous patch; a sinuous medial shade; postmedial line double, bent outwards below costa, excurved to vein 4, then incurved, excurved below submedian fold; subterminal line defined by an oblique fuscous patch on inner side at costa, then slightly defined by brown on inner side, angled outwards at vein 7, excurved at middle and incurved at submedian fold; a waved black terminal line; cilia brownish ochreous with a dark brown line through them. Hind wing white with a fine dark terminal line; the female sometimes with traces of diffused subterminal band; the underside with the costal area irrorated with brown, a slight black discoidal point.

Hab. France, Sand Coll.; Austria, Zeller and Frey Colls.; Hungary, Leech Coll.; N. and Centr. Italy; Dalmatia, Leech Coll.; Asia Minor, Lydia, Pontus. *Exp.* 34–38 millim.

Larva. Kirby, Butt. & Moths, Eur. p. 215; Hffm. Raup. p. 92.

Green; dorsal and subdorsal lines white; a broad white lateral stripe. Food-plants: *Anthericum liliago* and *ramosum*. 4, 5.

*2383. Derthisa corsacovi.

Agrotis korsakovi, Christ. Rom. Mém. ii. p. 35, pl. 2. f. 10 (1885), ♂; Staud. Cat. Lep. pal. p. 176.
Episema pænutata, Christ. Rom. Mém. ii. p. 45, pl. 2. f. 12 (1885), ♀.

♂. Head and thorax very pale ochreous slightly mixed with brown; palpi and frons at sides black; pectus suffused with black

in front; abdomen pale ochreous slightly irrorated with brown. Fore wing pale ochreous slightly suffused and irrorated with brown: subbasal line represented by a slight rufous striga from costa and blackish striga from cell; antemedial line pale rufous, with black striæ on it in and below cell, slightly angled outwards below costa, oblique to just below vein 1, then bent inwards to inner margin; claviform absent; orbicular and reniform with pale annuli, the former round, the latter with slight fuscous marks on inner edge of annulus; postmedial line rufous, slightly excurved below costa and incurved at discal fold, excurved at median nervules, then obliquely incurved, approximated to the subterminal line, which is faintly defined by pale fuscous on inner side, somewhat angled outwards at vein 7 and excurved at middle; cilia pale rufous. Hind wing ochreous uniformly suffused with brown; a dark terminal line; cilia ochreous; underside whitish; fore wing suffused with brown except costal and terminal areas; hind wing with very faint diffused subterminal band.

♀. Sides of palpi and frons and front of pectus slightly tinged with brown; fore wing with the markings less distinct, the lines without the blackish striæ, the cilia not rufous; hind wing slightly tinged with brown; underside of fore wing slightly tinged with brown, the hind wing without subterminal band.

Hab. Armenia; Asia Minor, Pontus, Amasia, in Coll. Püngeler. *Exp.* 40 millim.

Genus APOROPHYLA.

Type.

Aporophyla. Guen. Ann. Soc. Ent. Fr. x. p. 246 (1841), non descr.; id. Noct. p. 151 (1852) ..... *australis.*

Proboscis fully developed; palpi obliquely porrect to just beyond frons, the 2nd joint fringed with hair below; frons with rounded prominence roughened in front; eyes large, rounded; thorax clothed with hair and hair-like scales, the tegulæ produced to a slight dorsal ridge, the pro- and metathorax with spreading crests; tibiæ fringed with hair above; abdomen with some rough hair at base and crest on basal segment. Fore wing rather narrow, the apex rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 shortly stalked or from cell; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with long branches to apex.

2384. Aporophyla mioleuca.

Hadena mioleuca, Treit. Schmett. Eur., Suppl. p. 43 (1835); Rmbr. Cat. Lep. And. pl. 12. f. 2; Staud. Cat. Lep. pal. p. 178.
Polia chioleuca, Herr.-Schäff. Eur. Schmett. ii. p. 255, Noct. ff. 76–78 (1845).
Aporophyla corticosa, Led. Noct. p. 224 (1857).

♂. Head and thorax fuscous mixed with white and tinged with bluish grey and brown; legs fuscous ringed with white; abdomen white slightly mixed with pale fuscous, the dorsal crest

darker. Fore wing fuscous irrorated with white and suffused with bluish grey; subbasal line represented by black striæ from costa and cell; a slight black mark above inner margin near base; subbasal line double, the inner line indistinct, the outer formed of black striæ, curved; claviform minute, defined by black; orbicular and reniform with white annuli defined by black, the former rounded, the latter with black striga in centre and slightly angled inwards on median nervure; an indistinct waved medial line, oblique from costa to median nervure; postmedial line double, the

Fig. 74.—*Aporophyla mioleuca*, ♂. ½.

outer line indistinct, bent outwards below costa, then minutely waved, closely approximated to the reniform, oblique below vein 4, some white points beyond it on costa; subterminal line white defined by fuscous on inner side, waved, angled outwards at vein 7 and slightly excurved at middle; a terminal series of black lunules; cilia with a fine pale line at base. Hind wing white, the veins and very ill-defined subterminal diffused band tinged with fuscous; a fine waved terminal line from apex to vein 2; the underside irrorated with brown, a discoidal point and indistinct minutely dentate postmedial line.

Hab. Spain, Madrid, 1 ♂, Granada (*A. H. Jones*), 1 ♂; ? Italy; Sicily; Algeria. *Exp.* 34 millim.

Sect. II. Antennæ of male bipectinate with rather long branches to near apex.

2385. Aporophyla lutulenta.

Noctua lutulenta, Schiff. Wien. Verz. p. 81 (1776); Borkh. Eur. Schmett. iv. p. 576 (1792); Dup. Lép. Fr. v. p. 269, pl. 71. ff. 1, 2; Hübn. Eur. Schmett., Noct. f. 159; Herr.-Schäff. Eur. Schmett., Noct. ff. 83, 405; Staud. Cat. Lep. pal. p. 178.
Noctua electrica, Fabr. Ent. Syst. iii. 2, p. 46 (1793).
Noctua fusca, Haw. Lep. Brit. p. 204 (1809); Steph. Ill. Brit. Ent., Haust. ii. p. 109.
Noctua orthostigma, Steph. Ill. Brit. Ent., Haust. ii. p. 110 (1829).
Noctua consimilis, Steph. Ill. Brit. Ent., Haust. ii. p. 110 (1829).
Polia sedi, Dup. Lép. Fr., Suppl. iii. p. 196, pl. 18. f. 1 (1836).
Noctua tripuncta, Frr. Neue Beitr. pl. 501. f. 3 (1848).
Noctua luneburgensis, Frr. Neue Beitr. pl. 526. f. 2 (1848); Herr.-Schäff. Eur. Schmett., Noct. ff. 428-430.
Aporophyla pallida, Calb. Iris, i. p. 237 (1884).

♂. Head and thorax dark brown mixed with grey; pectus with

some white hair; abdomen grey mixed with brown. Fore wing fuscous brown with a purplish-grey gloss; traces of a double waved subbasal line from costa to submedian fold; an indistinct double waved oblique antemedial line; claviform minute, indistinctly defined; orbicular and reniform indistinctly defined by brown, the former

Fig. 75.—*Aporophyla lutulenta*, ♂. ½.

round; an indistinct waved medial line oblique from costa to lower angle of cell, then approximated to the postmedial line, which is double, bent outwards below costa, then minutely dentate, excurved to vein 4, then oblique, some white points beyond it on costa; subterminal line indistinct, pale, defined by brown on inner side, dentate, angled outwards at vein 7 and excurved at middle; a terminal series of slight dark lunules. Hind wing white, the veins and a fine terminal line brownish; the underside with the costal area irrorated with brown, a small discoidal lunule.

♀. Hind wing uniformly suffused with brown.

Ab. 1. *luneburgensis*. Fore wing more suffused with purplish grey, the markings distinct, the lines filled in with pale grey; the medial area sometimes suffused with black; hind wing with the basal half whitish in female.

Ab. 2. *sedi*. Fore wing pale grey irrorated with reddish brown, the markings distinct; hind wing with the basal half whitish in female.

Hab. Britain, Leech Coll.; Ireland, Leech Coll.; France, Zeller and Sand Colls.; Holland, Zeller and Frey Colls.; Germany, Zeller and Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Spain, Castile; Italy; Dalmatia; S. Sweden; Russia, Livonia. *Exp.* 36–42 millim.

Larva. Meyr. Brit. Lep. p. 58; Barrett, Lep. Brit. iv. p. 274, pl. 166. f. 1.

Pale green, the thoracic somites dorsally suffused with pink; dorsal and subdorsal lines brownish, interrupted, beginning at somite 4; spiracular line white edged with crimson above. Food-plants: *Myosotis*, *Lithospermum*, *Achillea*, &c. 10–4.

Sect. III. Antennæ of male with short branches ending in fasciculate cilia, the apical part serrate.

2386. Aporophyla australis.

Hadena australis, Boisd. Ind. Meth. Add. p. 6 (1829); Rmbr. Ann. Soc. Ent. Fr. i. p. 291, pl. 9. f. 8; Frr. Neue Beitr. iii. p. 27, pl. 209. f. 4; Dup. Lép. Fr., Suppl. iii. p. 391, pl. 35. ff. 4, 5; Herr. Schäff. Eur.

Schmett., Noct. ff. 159–60, 406; Mill. Icones, p. 202, pl. 2. ff. 4–8; Staud. Cat. Lep. pal. p. 178.
Agrotis pascuea, Curt. Brit. Ent. v. p. 165 (1827), non descr.; Guen. Noct. i. p. 152 (1852).
Xylina orientalis, Herr.-Schäff. Eur. Schmett., Noct. ff. 502–3 (1845).
Noctua scriptura, Frr. Neue Beitr. iii. p. 87, pl. 255. f. 2 (1847); Herr.-Schäff. Eur. Schmett., Noct. ff. 504–5.
Noctua ingenua, Frr. Neue Beitr. vi. p. 42, pl. 508 (1847).
Aporophyla morosa, Bell. Ann. Soc. Ent. Fr. 1862, p. 616, pl. 14. f. 7.
Aporophyla britannica, Staud. Stett. ent. Zeit. 1869, p. 91.
Aporophyla cinerea, Staud. Cat. Lep. pal. p. 178 (1901).

Head and thorax brown mixed with grey; metathoracic crest fuscous; fore tibiæ fuscous ringed with white; abdomen whitish tinged with brown. Fore wing whitish almost entirely suffused with brown, the costal area tinged with fuscous; the veins with dark streaks; a black streak below base of cell and an oblique streak above inner margin before middle; subbasal line represented by oblique striæ from costa and cell; antemedial line defined by white on inner side, highly dentate, in submedian fold often to the

Fig. 76.—*Aporophyla australis*, ♂. ½.

postmedial line; claviform more or less developed, defined by black; orbicular and reniform defined by black, the former oblique elliptical or irregular, the latter slightly angled inwards on median nervure and with some fuscous in its lower part; a slight irregular medial shade; postmedial line defined by white on outer side, bent outwards below costa, then highly dentate, closely approximated to reniform and incurved below vein 4, some white points beyond it on costa; subterminal line represented by a series of dentate fuscous marks in the interspaces; a terminal series of small black lunules; cilia brown intersected with white. Hind wing white, the veins and terminal area slightly tinged with brown; the underside with the costal area irrorated with brown, a discoidal point.

Ab. 1. *pascuea*. Thorax and fore wing whiter, the latter with the black streaks on basal area and dentate subterminal marks more prominent.—Britain.

Ab. 2. *scriptura*. Fore wing duller grey.

Ab. 3. *ingenua*. Fore wing almost uniform fuscous grey.

Ab. 4. *cinerea*. Fore wing almost uniform pale yellow.—Morocco.

Hab. Britain (*Doubleday*), Leech Coll.; France, Frey and Sand Colls.; Germany, Zeller and Leech Colls.; Austria; Hungary; Switzerland; Dalmatia, Leech Coll.; Greece; Morocco; Asia Minor, Pontus; Syria. *Exp.* 42 millim.

Larva. Meyr. Brit. Lep. p. 58; Barrett, Lep. Brit. iv. p. 282, pl. 167. f. 1. Yellow-green, dorsally suffused with reddish; dorsal line pale reddish marked with V-shaped black spots; a subdorsal series of black marks, spiracular line pale yellowish; head greenish speckled with brown. Food-plants: Grasses, *Cichorium*. 10–4.

Sect. IV. Antennæ of male serrate and fasciculate.

A. Fore wing black tinged with purplish grey ..... *nigra*.
B. Fore wing black mixed with dark brown ..... *haasi*.

2387. Aporophyla nigra.

Noctua nigra, Haw. Lep. Brit. p. 192 (1809); Steph. Ill. Brit. Ent., Haust. ii. p. 110, pl. 20. f. 1; Staud. Cat. Lep. pal. p. 178.
Noctua æthiops, Ochs. Schmett. Eur. iv. p. 67 (1816); Geyer, Eur. Schmett., Noct. f. 861; Frr. Neue Beitr. ii. pl. 147. f. 2 & iii. pl. 221.
Noctua nigricans, Hübn. Eur. Schmett., Noct. f. 538 (1827); Geyer, Eur. Schmett., Noct. ff. 859–60.
Aporophyla seileri, Fuchs, Stett. ent. Zeit. xii. p. 128 (1901).

Head and thorax black with a purplish-grey gloss; tegulæ with black medial line; tarsi ringed with white; abdomen fuscous brown tinged with grey and with some whitish hair at base. Fore wing black suffused with purplish grey and slightly irrorated with white, chiefly on the veins which are slightly darker; a double dentate subbasal line from costa to submedian fold; a double waved antemedial line; claviform moderate, defined by black; orbicular and reniform defined by black; the former oblique elliptical, the latter with more or less developed ochreous points on its outer edge; an irregularly waved indistinct medial line oblique

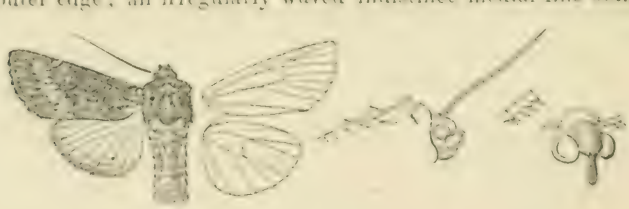


Fig. 77.—*Aporophyla nigra*, ♂. ½.

from costa to lower angle of cell; postmedial line double, the outer line indistinct, bent outwards below costa, then dentate, excurved to vein 4, then oblique; subterminal line formed by a series of obscure dentate dark marks with a few ochreous scales on their outer edges, angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia with slight whitish line through them. Hind wing white, the veins and inner margin suffused with brown, the terminal area irrorated with brown; a fine dark terminal line; cilia brown, whitish at tips, of female brown with some white in, below, and beyond cell; underside with the costal area irrorated with brown, a discoidal point and postmedial series of short streaks on the veins.

Ab. 1. *seileri*. Fore wing uniform deep black.

Hab. Britain, Scotland, Leech Coll., England (*Barrett*), Leech Coll.; France, Sand Coll., Auvergne, Frey Coll.; Germany, Zeller Coll.; Hungary; Switzerland; Italy, Capri (*C. S. Browne*); Dalmatia, Leech Coll.; S. Norway; Asia Minor, Pontus; Palestine. *Exp.* 42–48 millim.

Larva. Meyr. Brit. Lep. p. 58; Barrett, Lep. Brit. iv. p. 278, pl. 166. f. 2.

Green, yellow-brown, yellow or dull crimson, the thoracic somites often suffused with red; dorsal and subdorsal lines usually darker, often interrupted; spiracular line pale yellowish; spiracles white, on somites 4-6 placed on black marks. Food-plants: *Rumex*, *Plantago*, *Galium*, &c. 10–5.

*2388. Aporophyla haasi.

Aporophyla haasi, Staud. Iris, iv. p. 280 (1891); id. Cat. Lep. pal. p. 178.

Differs from *A. nigra* in the fore wing not being deep black, but mixed with brown and with the markings more distinct.

Hab. Spain, Castile. *Exp.* 36–41 millim. This species is unknown to me.

Genus **CLOANTHA.**

	Type.
Cloantha, Guen. Ann. Soc. Fr. viii. p. 509 (1839)	*solidaginis.*
Egira, Dup. Cat. Méth. p, 162 (1844)	*pulla.*
Scotochrosta, Led. Noct. Eur. p. 155 (1857)	*pulla.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair, the 3rd short; frons rounded; eyes large, rounded; antennæ of male minutely serrate and fasciculate; head and thorax clothed chiefly with scales, the pro- and metathorax with spreading crests; abdomen clothed with rough hair at base, with basal crest and lateral fringes of hair towards extremity. Fore wing rather long and narrow, the apex somewhat produced, the termen obliquely curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen slightly excised at discal fold; veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base.

A. Fore wing with dentate black marks before middle of subterminal line	*solidaginis.*
B. Fore wing without dentate black marks before middle of subterminal line	*pulla.*

2389. Cloantha solidaginis.

Noctua solidaginis, Hübn. Eur. Schmett., Noct. f. 256 (1827); Dup. Lép. Fr. vii. p. 179, pl. 112. f. 1; Curt. Brit. Ent. pl. 683; Steph. Ill. Brit. Ent., Haust. iv. p. 390; Frr. Neue Beitr. pl. 634; Staud. Cat. Lep. pal. p. 211.

Calocampa cinerascens, Staud. Cat. Lep. pal. p. 120 (1872).

Calocampa germana, Morr. Bull. Buff. Soc. Nat. Sci. ii. p. 192 (1874); Smith, Cat. Noct. N. Am. p. 235.

Calocampa pallida, Tutt, Brit. Noct. iii. p. 110 (1892).

Head and thorax whitish mixed with brown or rufous; frons

with lateral black bars; tegulæ with medial black line; metathorax with the crest dark; abdomen pale brownish. Fore wing bluish grey more or less strongly suffused with brown; the veins with fine black streaks; fine black streaks in and below base of cell; subbasal line represented by an oblique striga from base of costa; antemedial line rather indistinct, dentate, more strongly in submedian fold and above inner margin; claviform obsolete; orbicular represented by two obliquely-placed round whitish annuli defined by black, the upper one sometimes obsolete; reniform large with whitish centre defined by brown and whitish annulus defined by black; the medial area usually with more or less developed broadly diffused black shade; postmedial line strongly dentate, somewhat bent outwards below costa and oblique below vein 4, straight and approximated to reniform beyond the cell, some white points on costa beyond it; subterminal line white, defined by brown on inner side, dentate to near termen on veins 4, 3, and with wedge-shaped black marks before it above veins 4 and 3, sometimes with smaller marks above and below them; a terminal series of slight black lunules; cilia chequered fuscous and grey. Hind wing whitish tinged with brown, especially in female, the terminal area suffused with brown: cilia white; the underside white irrorated with brown, a discoidal spot and indistinct curved postmedial line.

Ab. 1. *cinerascens*. Paler and greyer, fore wing with the markings less prominent.

Ab. 2. Head, thorax, and fore wing much deeper blue-grey tinged with fuscous instead of brown; hind wing mostly suffused with fuscous.—Alberta.

Hab. Canada, Hudson's Bay, St. Martin's Falls (*Barnston*), 2 ♀, (*Norman*), 1 ♂, 1 ♀; Manitoba, Winnipeg, 1 ♂, Alberta, Calgary (*Wolley-Dod*), 3 ♂, 2 ♀; U.S.A., Northern and Eastern States, New York, 3 ♂, 1 ♀, Pennsylvania, 1 ♂; Britain, Leech Coll.: France; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland; Russia, Livonia, Zeller Coll., Esthonia, Frey Coll., Urals; W. Siberia, Altai; E. Siberia, Amurland. *Exp.* 48–54 millim.

Larva. Meyr. Brit. Lep. p. 51; Barrett, Lep. Brit. vi. p. 46, pl. 236. f. 3.

Dark purplish brown; dorsal line blue-grey, darker edged; spiracular line broad, pale yellow, finely black-edged above; a black mark in front of 1st somite; head pale brown. Food-plant, *Vaccinium*. 5–6.

2390. Cloantha pulla.

Noctua pulla, Schiff. Wien. Verz. p. 76 (1776); Hübn. Eur. Schmett., Noct. ff. 238 & 692–3; Dup. Lép. Fr. vii. p. 226, pl. 114. f. 4; Herr.-Schäff. Eur. Schmett., Noct. f. 506; Steph. Ill. Brit. Ent., Haust. ii. p. 170; Staud. Cat. Lep. pal. p. 212.

Noctua felixii, Frr. Neue Beitr. iv. pl. 311. f. 4 (1842).

Head, thorax, and abdomen grey mixed with brownish fuscous; palpi streaked with black at sides; frons with black bar; tegulæ

with black medial line with slight line before it; tibiæ streaked with black; pectus and ventral surface of abdomen with some ochreous hair. Fore wing grey tinged in parts with ochreous and mostly suffused and irrorated with fuscous; the veins streaked with black; a fine black streak below base of cell; subbasal line only defined by a patch of blackish suffusion beyond it; antemedial line dentate outwards in the interspaces and inwards on the veins, strongly on inner half; claviform absent; orbicular represented by a minute obscure pale annulus with blackish streaks beyond it; the extremity of median nervure with blackish streaks above and below

Fig. 78.—*Cloantha pulla*, ♂. ½.

it; reniform a faint pale patch; a blackish patch on middle of costa; postmedial line indistinct, blackish defined by whitish on outer side, strongly bent outwards below costa, then highly dentate, oblique below vein 4 and angled inwards in submedian fold to antemedial line; subterminal line pale brownish, hardly defined except by the area beyond it being slightly darker, strongly angled inwards in discal and submedian folds. Hind wing white, the veins brown; the underside with the costal area irrorated with brown.

Hab. S. France, Leech Coll.; Austria, Zeller, Frey, and Leech Colls.; Hungary, Leech Coll. N. Italy; ? Sicily; S. Russia; ? Crete. *Exp.* 40–50 millim.

Larva. Kirby, Butt. & Moths, Eur. p. 251.

Green marbled with white and with white lateral stripes. Food-plants: various low-growing plants. 4–5.

Genus **EUSCOTIA.**

	Type.
Euscotia, Butl. Ill. Het. B.M. vii. p. 47 (1889)	*inextricata.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front, the 3rd rather long, porrect and dilated at extremity; frons rounded; eyes large, rounded; antennæ of male with slight fascicles of cilia; head and thorax clothed chiefly with scales, the tegulæ dorsally produced to a slight ridge, the thorax with divided ridge-like crest; tibiæ fringed with hair; abdomen with dorsal series of crests. Fore wing rather long and narrow, the apex somewhat produced, the termen obliquely curved and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen slightly crenulate; veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Hind wing of male white, the veins and termen slightly tinged with brown ..... [illegible].
B. Hind wing of male wholly tinged with brown, the terminal area broadly dark ..... *saga*.

2391. Euscotia inextricata.

Rhizogramma inextricata, Moore, P. Z. S. 1881, p. 342; Hmpsn. Moths Ind. ii. p. 237.

Head and thorax grey mixed with brown; tegulæ with black medial line and slight lines near base and before tips, which are dark; patagia with black line near upper edge, which is dark; tibiæ with black streaks; abdomen grey dorsally suffused with brown. Fore wing grey irrorated and suffused with brown; the veins with slight dark streaks; a black streak below base of cell;

Fig. 79.—*Euscotia inextricata*, ♂. ½.

subbasal line represented by a very oblique striga from base of costa and slight striga from cell; antemedial line indistinctly double, represented by very oblique striæ from costa, then obsolete to below median nervure, where it is angled outwards in submedian fold and above inner margin and inwards on vein 1; a slight streak above medial part of inner margin; claviform absent; orbicular and reniform incompletely defined by brown, the former with slight brown centre, elongate, and its lower part produced into a streak confluent with the reniform, which has its centre slightly defined by brown; postmedial line indistinct, double, dentate, bent outwards below costa and very oblique below vein 4, strongly angled inwards and forming a bidentate whitish mark in submedian fold; diffused oblique brown fasciæ from it to termen below apex and below veins 4 and 3; a terminal series of black points. Hind wing semihyaline white, the veins of terminal half and the termen slightly tinged with brown in male, more strongly in female; the underside with the costal area irrorated with brown.

Hab. Kashmir, Narkundah (*McArthur*), 1 ♀; Punjab, Kulu, Sultanpur (*G. Young*), 2 ♂, 1 ♀, Simla (*Harford*), 2 ♂, 3 ♀ type, Dalhousie, 1 ♀, Thundiani (*Yerbury*), 3 ♂, 1 ♀, Dharmsála (*Hocking*), 5 ♂, 3 ♀; Madras, Nilgiris (*Swinhoe*), 1 ♀. *Exp.* 52–56 millim.

Larva. Brownish ochreous with faint brown mottling; warts small, whitish edged with brown; dorsal line slight, finely edged on each side with brown; subdorsal line almost obsolete; stigmatal line yellowish edged above by brown developed into slight medial patches on the somites; stigmata ringed with whitish; 11th somite with dorsal brown bar; head with the hemispheres chocolate-brown. Food-plant, *Berberis*. 6.

2392. Euscotia saga.

Lithophane saga, Butl. A. M. N. H. (5) i. p. 198 (1878); id. Ill. Het. B. M. iii. p. 18, pl. 95. f. 9; Staud. Cat. Lep. pal. p. 183.
Rhizogramma aurilegula, Oberth. Et. Ent. v. p. 71, pl. iii. f. 16 (1880).
Xylophasia incognita, Butl. Cist. Ent. iii. p. 132 (1885).

Head and thorax grey mixed with brown; tegulæ with black medial line and slight lines near base and before the tips, which are brown; patagia with black line near upper edge, which is brown; tibiæ with black streaks; abdomen grey dorsally suffused with brown. Fore wing grey irrorated and suffused with brown; the veins with slight dark streaks; a dark streak below base of cell; subbasal line represented by double oblique striæ from costa; antemedial line indistinct, double, angled outwards in the interspaces and inwards on the veins, very strongly angled outwards in submedian fold and above inner margin; a slight dark streak above middle of inner margin; claviform absent; orbicular and reniform indistinct and incompletely defined by brown, the former elongate, its lower part produced as a streak and confluent with the latter; postmedial line indistinctly double, dentate, bent outwards below costa and oblique below vein 4, in submedian fold angled inwards to the antemedial line and forming a somewhat bidentate whitish mark, diffused oblique brown fasciæ from it to termen below apex and below veins 4 and 3; a terminal series of dark points. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown, very strongly in female.

Hab. E. Siberia, Ussuri; Japan, Yezo (*Pryer*), 1 ♂ type *incognita*, Yokohama (*Jonas*, *Pryer*, *Manley*), 1 ♂, 5 ♀ type; Corea. *Exp.* 52–58 millim.

Genus LITHOPHANE.

	Type.
Lithophane, Hübn. Verz. p. 242 (1827)	*socia*.

Proboscis fully developed; palpi with the 2nd joint oblique and fringed with hair, the 3rd moderate, porrect; frons rounded; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales, the frons and vertex of head with tufts of hair, the tegulæ produced to a slight dorsal ridge, the prothorax with large divided crest, the metathorax with spreading crest; abdomen triangular, with dorsal series of large crests. Fore wing rather narrow, the apex somewhat produced, the termen obliquely rounded and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell.

Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from angle; 8 anastomosing with the cell near base only.

A. Fore wing without prominent oblique medial shade from costa to lower angle of cell.
  a. Fore wing narrow, with dark streak on middle of inner margin ..... *semibrunnea.*
  b. Fore wing broader, without dark streak on inner margin ..... *socia.*
B. Fore wing with prominent oblique medial shade from costa to lower angle of cell ..... *lederi.*

2393. Lithophane semibrunnea.

Noctua semibrunnea, Haw. Lep. Brit. p. 171 (1809); Steph. Ill. Brit. Ent., Haust. ii. p. 170, pl. 21. f. 3; Mill. Icones, pl. 33. ff. 1–3; Staud. Cat. Lep. pal. p. 210.
Noctua oculata, Germ. Faun. Ins. ix. pl. 18 (1836); Dup. Lép. Fr. iii. p. 373, pl. 34. f. 4; Herr.-Schäff. Schmett. Eur., Noct. f. 460; Frr. Neue Beitr. pl. 516. f. 2.

Head and thorax ochreous tinged with rufous and mixed with purplish fuscous, the prothoracic crest and outer edge of patagia at base purple-fuscous; abdomen ochreous tinged with rufous, the dorsal crests purplish black. Fore wing suffused with rufous, the inner half or sometimes nearly the whole wing dark red-brown with purplish-black streaks on middle of inner margin and in submedian fold beyond middle; a slight pale streak below base of cell with brown streak below it; subbasal line represented by a faint pale, very oblique striga from costa; the antemedial line represented by double black points on the veins, with traces of a pale dentate line beyond them, strongly angled outwards in submedian fold; claviform obsolete; orbicular and reniform with very indistinct pale annuli defined by brown, the former very oblique elliptical, the latter constricted at middle; postmedial line represented by a double series of black points on the veins, strongly bent outwards below costa, excurved to vein 4, strongly incurved and represented by a pale lunule in submedian fold; subterminal line pale, somewhat dentate, angled outwards to termen on veins 4, 3, the area beyond it rather darker. Hind wing ochreous whitish suffused with brown, especially on the veins and terminal area; cilia whitish at tips; the underside whitish, the costal and terminal areas irrorated with brown, a discoidal lunule and curved punctiform postmedial line.

Hab. Britain, Leech Coll.; S. France; Germany, Pomerania, Brunswick, Zeller Coll.; Austria, Frey and Leech Coll.; Hungary; Italy; Bulgaria. *Exp.* 42–44 millim.

Larva. Meyr. Brit. Lep. p. 51; Barrett, Lep. Brit. vi. p. 25, pl. 235. f. 1.

Bright green irrorated above with yellowish white; dorsal line white; subspiracular line yellowish white; subbasal and lateral series of irregular whitish marks. Food-plant, Ash. 5–7.

2394. Lithophane socia.

Noctua socia, Rott. Naturf. ix. p. 142 (1776); Staud. Cat. Lep. pal. p. 210.
Noctua petrificata, Schiff. Wien. Verz. p. 75 (1776); Fabr. Mant. Ins. ii. p. 182 (1787); Dup. Lép. Fr. iii. p. 370, pl. 34. f. 3; Steph. Ill. Brit. Ent., Haust. ii. p. 171, pl. 23. f. 1.
Noctua petrificosa, Hübn. Eur. Schmett., Noct. f. 239 (1827).
Lithophane petrolignea, Hübn. Verz. p. 242 (1827).

Head and thorax greyish ochreous tinged with rufous; palpi with black lateral stripe; frons with black bar; tegulæ with black line near tips; patagia with some black scales near upper edge; tibiæ streaked with black; abdomen greyish ochreous dorsally tinged with brown, ventrally with rufous. Fore wing greyish ochreous tinged with rufous, the inner half often suffused with

Fig. 80.—*Lithophane socia*, ♂. $\frac{1}{1}$.

purplish fuscous; a brown streak below base of cell; subbasal line represented by a slight oblique pale striga from costa; antemedial line represented by double black points on the veins with traces of a pale dentate line beyond them strongly angled outwards in submedian fold; claviform absent; orbicular and reniform indistinct, pale, the former very oblique elliptical, the latter with its lower edge defined by a pale streak with brown below it; postmedial line represented by a double series of black points on the veins, strongly bent outwards below costa, excurved to vein 4 and strongly incurved and forming a pale lunule in submedian fold; subterminal line indistinct, pale, somewhat dentate, angled outwards to termen at veins 4, 3, and with slight dentate brown marks before it at middle and in submedian interspace, the extremity of the veins with dark streaks. Hind wing ochreous whitish suffused with brown; cilia whitish at tips; the underside pale, the costal and terminal areas irrorated with brown, a discoidal lunule and oblique postmedial line incurved to costa.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller and Leech Colls.; Hungary; Switzerland, Frey Coll.; Italy; Russia, Livonia, Zeller Coll., St. Petersburgh, Zeller Coll.; W. Siberia, Altai; E. Siberia, Amurland, Ussuri. *Exp.* 42–46 millim.

Larva. Meyr. Brit. Lep. p. 51; Barrett, Lep. Brit. vi. p. 28, pl. 235. f. 2.

Pale green; dorsal and lateral lines white; head black. Food-plants: Ash, Oak, and *Tilia*. 5–7.

*2395. Lithophane ledereri. (Plate CII. fig. 3.)

Xylina ledereri, Staud. Iris, iv. p. 301 (1891); id. Cat. Lep. pal. p. 210.

Head and thorax deep rufous mixed with some ochreous and dark brown; palpi with blackish streak at sides; frons and vertex of head with dark bars; tegulæ with sinuous black line near base and blackish tips; patagia with blackish edges; vertex of thorax with blackish fascia; pectus and legs yellowish white and rufous, the tibiæ with slight black streaks; abdomen pale rufous, the dorsal crests large, black-brown. Fore wing pale greyish tinged and irrorated with rufous, the inner margin suffused with deep rufous except towards base; subbasal line represented by double oblique red-brown striæ from costa; antemedial line rather indistinct, double, red-brown, rather oblique towards costa, twice angled outwards in submedian interspace and once above inner margin, angled inwards in submedian fold and above vein 1; orbicular and reniform slightly and incompletely defined by red-brown, the former rounded, the latter tinged with ochreous and rufous on inner side; medial shade strong, diffused, red-brown and oblique from costa to lower angle of cell, then slight and inwardly oblique; postmedial line indistinct, double at costa, bent outwards below costa, then dentate and produced to a double series of dark points on the veins, excurved to vein 4, then incurved and with slight pale lunule on its outer edge in submedian interspace; subterminal line indistinct, pale defined on inner side by somewhat dentate rufous marks except towards costa and by a blackish bar in submedian interspace, angled outwards at veins 7, 4, 3, with diffused deep rufous patches beyond it below apex and on inner area, the veins of terminal area streaked with black; cilia deep rufous intersected with greyish and with fine greyish line at base. Hind wing ochreous whitish tinged with brown, the veins and terminal area rather darker; cilia yellowish white tinged with rufous; the underside yellowish white slightly tinged with rufous, the costal and terminal areas irrorated with rufous, a dark discoidal spot and indistinct curved postmedial line with minute dark streaks on the veins.

Hab. Rhodes; Asia Minor, Pontus in Coll. Püngeler, Amasia.
Exp. 46 millim.

Genus GRAPTOLITHA.

	Type.
Graptolitha, Hübn. Verz. p. 242 (1827)	*furcifera*.
Rhizolitha, Curt. Entom. Mag. i. p. 189 (1833)	*lambda*.

Proboscis fully developed; palpi with the 2nd joint oblique and fringed with long hair, the 3rd moderate, porrect; frons rounded; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and hair-like scales, the frons and vertex of head with tufts of hair; tegulæ produced to a slight dorsal ridge, the prothorax with divided crest, the metathorax with spreading crest; pectus clothed with long hair; abdomen dorsally flattened, with dorsal crests on basal segments and lateral fringes of hair. Fore wing

rather narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing more or less suffused with rufous or dark brown, without blue or purplish grey or greenish tinge.
  a. Fore wing with the antemedial line not angled outwards in submedian fold ..... *semiusta.*
  b. Fore wing with the antemedial line angled outwards in submedian fold and connected by a dark patch with the postmedial line.
    a^1. Fore wing without distinct streak below base of cell.
      a^2. Fore wing whitish tinged with rufous, the markings fairly distinct; hind wing pale ..... *bethunei.*
      b^2. Fore wing greyer, the markings obsolescent; hind wing fuscous or black ..... *patefacta.*
      c^2. Fore wing strongly suffused with rufous ..... *innominata.*
    b^1. Fore wing with distinct black streak below base of cell.
      a^2. Fore wing with the claviform large, strongly defined by black ..... *rosinæ.*
      b^2. Fore wing with the claviform minute.
        a^3. Fore wing with the orbicular and reniform not defined by black ..... *hemina.*
        b^3. Fore wing with the orbicular and reniform defined by black ..... *disposita.*
    c^1. Fore wing with slight brown or black streak below base of cell.
      a^2. Fore wing purplish red.
        a^3. Fore wing with the orbicular and reniform defined by pure white ..... *oriunda.*
        b^3. Fore wing with the orbicular and reniform defined by greyish or yellowish white.
          a^4. Fore wing with the costal area pale ..... *ferrealis.*
          b^4. Fore wing with the costal area concolorous . *gausapata.*
      b^2. Fore wing grey suffused with rufous, the subterminal line formed by small pale dentate marks ..... *petulca.*
      c^2. Fore wing grey-brown, the subterminal line formed by pale oblique striæ ..... *signosa.*
      d^2. Fore wing grey-white, slightly tinged with yellowish and rufous ..... *amanda.*
B. Fore wing with the ground-colour white, not tinged with rufous or brown.
  a. Fore wing without rufous suffusion in lower part of reniform.
    a^1. Fore wing with the black streak below base of cell connected with the subbasal line and forming a curved mark ..... *pruinosa.*
    b^1. Fore wing with the black streak below base of cell extending beyond the subbasal line and not connected with it ..... *brachyptera.*
  b. Fore wing with rufous suffusion in lower part of reniform ..... *ornithopus.*

C. Fore wing with the ground-colour blue or violaceous grey or greenish.
  a. Fore wing with the black streak below base of cell connected with the subbasal line and forming a curved mark, usually with whitish above it.
    a^1. Fore wing with black streak in submedian fold between ante- and postmedial lines.
      a^2. Fore wing with the black streaks below base of cell and between ante- and postmedial lines strong ..... *laudabilis*.
      b^2. Fore wing with the black streaks below base of cell and between ante- and postmedial lines much less prominent ..... *lepida*.
    b^1. Fore wing with black streak in submedian fold between extremity of claviform and postmedial line.
      a^2. Fore wing with the orbicular oblique elliptical.
        a^3. Hind wing with distinct rufous tinge ..... *furcifera*.
        b^3. Hind wing without rufous tinge.
          a^4. Fore wing with the reniform quadrate and slightly angled inwards on median nervure. *ingrica*.
          b^4. Fore wing with the reniform not angled inwards on median nervure.
            a^5. Fore wing with the reniform broad, suffused with rufous ..... *pexata*.
            b^5. Fore wing with the reniform narrow and not suffused with rufous ..... *ustulata*.
      b^2. Fore wing with the orbicular round ..... *dilatocula*.
    c^1. Fore wing without black streak in submedian fold between ante- and postmedial lines.
      a^2. Fore wing with the ground-colour grey.
        a^3. Fore wing with the reniform not tinged with rufous.
          a^4. Fore wing with the scaling roughly irrorated with black scales ..... [illegible].
          b^4. Fore wing with the scaling smoother and not irrorated with black scales ..... *laticinerea*.
        b^3. Fore wing with the reniform suffused with rufous.
          a^4. Fore wing with round spot below orbicular.
            a^5. Fore wing nearly uniform violaceous grey. *antennata*.
            b^5. Fore wing largely suffused with white..... *torrida*.
          b^4. Fore wing without round spot below orbicular.
            a^5. Fore wing violaceous grey, the basal area suffused with white.
              a^6. Fore wing more uniform brownish grey. *atincta*.
              b^6. Fore wing rather more variegated with white ..... *tepida*.
            b^5. Fore wing with the basal half suffused with white ..... *baileyi*.
      b^2. Fore wing with the ground-colour pale green.
        a^3. Fore wing with prominent dentate black marks before subterminal line..... *querquera*.
        b^3. Fore wing without prominent black marks before subterminal line..... *viridipallens*.
  b. Fore wing with slender black streak in submedian fold extending beyond the subbasal line and not connected with it.
    a^1. Fore wing without dark streaks on the veins.

a^2. Fore wing with black streak below end of cell.
a^3. Fore wing with the cilia intersected by fuscous streaks ..... *lapidea*
b^3. Fore wing with the cilia not intersected by fuscous streaks ..... *longior*
b^2. Fore wing without black streak below end of cell.
a^3. Fore wing violaceous grey tinged with brown . *contenta.*
b^3. Fore wing blue-grey.
a^4. Fore wing with the ground-colour whitish blue-grey..... *puella.*
b^4. Fore wing with the ground-colour fuscous blue-grey.
a^5. Fore wing with the costal area irrorated with white ..... *merceda.*
b^5. Fore wing with the costal area not irrorated with white ..... *unimoda.*
b^1. Fore wing with dark streaks on the veins.
a^2. Fore wing with the orbicular and reniform more or less distinctly defined.
a^3. Fore wing blue-grey.
a^4. Fore wing with oblique medial dark shade from costa.
a^5. Fore wing with the orbicular well defined and connected with a mark below cell.
a^6. Fore wing with the medial shade entire. *vertina.*
b^6. Fore wing with the medial shade from costa to median nervure only.
a^7. Fore wing pale blue-grey ..... *ancilla.*
b^7. Fore wing slightly suffused with fuscous ..... *holocinerea.*
b^5. Fore wing with the orbicular hardly defined and not connected with a mark below it .... *fletcheri.*
b^4. Fore wing without medial dark shade.
a^5. Fore wing with the dentate marks before subterminal line prominent ..... *georgi.*
b^5. Fore wing with the dentate marks before subterminal line slight ..... *emarginata.*
b^3. Fore wing whitish grey ..... *oregonensis.*
b^2. Fore wing with the orbicular and reniform obsolete ..... *merci.*
c. Fore wing without black streak below base of cell.
a^1. Fore wing with the orbicular and reniform present but not defined ..... *itata.*
b^1. Fore wing with the orbicular and reniform obsolete. *fagina.*

2396. **Graptolitha semiusta.** (Plate CII. fig. 4.)

Lithophane semiusta, Grote, 6th Rep. Peab. Acad. Sci. p. 34 (1874); Smith, Cat. Noct. N. Am. p. 228.

Head and thorax ferruginous red mixed with grey; abdomen pale rufous irrorated with dark brown. Fore wing pale greyish almost entirely irrorated and suffused with bright rufous; subbasal line represented by a pale striga from costa; antemedial line defined by greyish on inner side, waved; orbicular and reniform with whitish annuli defined by rufous, the former round, the latter somewhat constricted at middle; a slight medial shade; post-

medial line defined by whitish on outer side, dentate and produced to short white and black streaks on the veins, bent outwards below costa, excurved to vein 4, then incurved, some white points beyond it on costa; subterminal line whitish defined by rufous on inner side, angled outwards at vein 7 and excurved at middle, the area beyond it slightly darker. Hind wing uniform fuscous brown, the cilia whitish; the underside whitish thickly irrorated with rufous, a discoidal spot and curved postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 3 ♂, 1 ♀ type; U.S.A., Maine, Vermont, N. York. *Exp.* 36–40 millim.

2397. Graptolitha bethunei. (Plate CII. fig. 5.)

Xylina bethunei, Grote & Rob. Trans. Am. Ent. Soc. i. p. 354, pl. 7. f. 56 (1868); Smith, Cat. Noct. N. Am. p. 227.

Head and thorax whitish mixed with pale rufous; palpi streaked with black at sides; frons with blackish bar; tegulæ with slight black line near tips; patagia with some black scales near upper edge; abdomen ochreous grey irrorated with fuscous. Fore wing whitish slightly tinged with red-brown and irrorated with fuscous: subbasal line represented by slight double striæ from costa: antemedial line indistinct, double, waved and angled inwards to double black points on the veins, in submedian fold conjoined by a slight fuscous streak with the postmedial line; orbicular and reniform defined by orange-brown, the former oblique elliptical, open above, the latter open above and somewhat constricted at middle; a slight curved medial shade; postmedial line indistinctly double, dentate and produced to a double series of black points on the veins, bent outwards below costa and oblique below vein 4, some white points beyond it on costa; subterminal line indistinct whitish defined by orange-brown on inner side, somewhat angled outwards at vein 7 and dentate at veins 4, 3, the area beyond it with slight dark streaks on the veins; a terminal series of black points. Hind wing whitish uniformly suffused with fuscous; some black striæ on apical half of termen; cilia white: the underside white slightly irrorated with fuscous, a discoidal spot and sinuous postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 2 ♂, 1 ♀; U.S.A., N.E. and Middle States, New York, Schenectady (*Lintner*), 2 ♂, 1 ♀. *Exp.* 40–42 millim.

Larva. Almost identical with *antennata*.—H. G. D.

2398. Graptolitha patefacta. (Plate CII. fig. 6.)

Xylina patefacta, Wlk. xv. 1733 (1858); Smith, Cat. Noct. N. Am. p. 231.

♂. Head and thorax grey-white slightly mixed with pale rufous; palpi streaked with black at sides; frons with lateral black bars and black bar above; antennæ with the scales in front of shaft near base black; tegulæ with black medial line defined by

white behind; patagia with outer edges rufous; prothoracic crest rufous at tips; tarsi with black spots above, mid and hind tibiæ streaked with black, the spurs ringed with black; abdomen brownish grey dorsally irrorated with fuscous and with slight fuscous segmental lines. Fore wing whitish grey slightly tinged and irrorated with rufous; a slight rufous streak below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line with two oblique striæ from costa, then indistinct, single, oblique to submedian fold, where it is angled outwards, then angled inwards on vein 1, with double black points before it on the veins and a black patch in submedian fold from it to postmedial line; orbicular and reniform slightly defined by rufous except above, the former oblique elliptical, almost connected with the latter at median nervure; an oblique rufous medial shade from costa to lower angle of cell; postmedial line double at costa, then very indistinct, strongly bent outwards below costa, then dentate and produced to a double series of black points on the veins, oblique below vein 4, some whitish points beyond it on costa; subterminal line indistinct, whitish defined on inner side by a series of small dentate rufous marks except towards costa and inner margin, slightly angled outwards at veins 7, 4, 3; the veins of terminal area irrorated with black, a terminal series of slight black points; cilia rufous at base, whitish at tips. Hind wing greyish, nearly uniformly suffused and irrorated with fuscous; cilia ochreous white; the underside whitish slightly irrorated with brown, a blackish discoidal spot and indistinct sinuous postmedial line.

Hab. Canada, 1 ♂. *Exp.* 40 millim. Type † ♂ in Mus. Oxon.

2399. Graptolitha innominata. (Plate CII. fig. 7.)

Lithophane signosa, Grote, 6th Rep. Peab. Acad. Sci. p. 33 (1874), nec Wlk.
Xylina innominata, Smith, Cat. Noct. N. Am. p. 227.

Head and thorax pale rufous; palpi streaked with blackish at sides; frons with black bar; tegulæ with traces of dark line near tips; patagia with some black scales near upper edge; abdomen pale rufous dorsally tinged with fuscous. Fore wing rufous, the costal area whitish tinged with rufous or wholly ochreous tinged with rufous; subbasal line represented by slight striæ from costa; antemedial line indistinct, double, dentate and angled inwards to two black points on the veins, a fuscous patch in submedian fold between it and postmedial line; orbicular and reniform large, defined by rufous, the former oblique elliptical, open above, the latter constricted at middle and narrow below; traces of a rufous medial shade; postmedial line double at costa, then very indistinct, bent outwards below costa, dentate and produced to a double series of black points on the veins, incurved below vein 4; subterminal line defined by a somewhat dentate rufous line on inner side, slightly angled outwards at vein 7 and excurved at middle, with

slight black and white streaks on the veins beyond it and sometimes fuscous patches below apex and above tornus; a terminal series of dark points. Hind wing pale reddish uniformly suffused with fuscous, except the margins; the underside pale reddish irrorated with brown, a small discoidal spot and sinuous postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♀; U.S.A., N.E. States, New York, Lewis Co. (*W. W. Hill*), 1 ♂, 2 ♀ type, Colorado. *Exp.* 42–44 millim.

*2400. Graptolitha rosinæ. (Plate CII. fig. 8.)

Xylina rosinæ, Püng. Iris, xix. p. 95 (1906).

♀. Head and thorax grey tinged with red-brown and mixed with black; palpi with black streaks at sides; frons with black bars at middle and above; vertex of head with black streak; antennæ black; tegulæ black at base and tips, and with white medial band; patagia edged with black; prothoracic crest black; pectus and legs pale and deep red-brown, the tibiæ streaked with black; abdomen reddish and dark brown, the crest on 3rd segment blackish with grey tip. Fore wing grey tinged with red-brown and irrorated with large black scales; a fine black streak in base of submedian fold; subbasal line represented by double oblique black striæ from costa with blackish patch beyond them; antemedial line indistinct, double, waved, angled outwards in submedian fold; claviform large, defined by black; orbicular and reniform large, defined by dark brown, the former somewhat oblique elliptical, the latter angled inwards on median nervure; medial shade forming blackish patches below costa and cell; postmedial line indistinct, double and oblique from costa to vein 7, then represented by a double series of black points on the veins, excurved to vein 4, then oblique; subterminal line represented by a series of slight red-brown dentate marks with wedge-shaped black patch beyond them below apex and spot in submedian interspace; a terminal series of rather triangular black points; cilia grey-brown with a diffused black line through them. Hind wing dark reddish brown with blackish discoidal spot and terminal series of blackish striæ; cilia red-brown with fine pale line at base; the underside pale rufous irrorated with large black scales, a black discoidal spot, diffused postmedial line with minute black streaks on the veins, and terminal series of black lunules.

Hab. E. Siberia, Amurland, Radde, type † ♀ in Coll. Püngeler. *Exp.* 42 millim.

2401. Graptolitha hemina. (Plate CII. fig. 9.)

Lithophane hemina, Grote, Bull. Geol. Surv. v. p. 202 (1879); Smith, Cat. Noct. N. Am. p. 227.

♂. Head and thorax brownish ochreous mixed with dark brown,

grey, and black; palpi streaked with black at sides; frons with black bar; tegulæ with black line near tips; patagia with blackish outer edge and some black scales near upper edge; tibiæ streaked with black; abdomen pale rufous irrorated with fuscous. Fore wing pale grey-brown irrorated with fuscous; a black streak below base of cell with some black suffusion below it; subbasal line double at costa and angled outwards on median nervure; antemedial line indistinctly double, strongly angled outwards in the interspaces and inwards to a double series of black points on the veins, a blackish mark in submedian fold between it and the postmedial line; orbicular and reniform rather pale, incompletely defined by brown, the former oblique elliptical, open above, the latter somewhat constricted at middle and angled inwards on median nervure; an oblique dark medial shade from costa to cell; postmedial line double at costa, then indistinct, bent outwards below costa, dentate and produced to a double series of black points on the veins, incurved below vein 4; subterminal line greyish defined by small dentate brown marks on inner side, minutely waved, angled outwards at vein 7 and excurved at middle, blackish patches beyond it below apex and above tornus; a terminal series of small black lunules. Hind wing whitish nearly uniformly suffused with brown; cilia white at tips; the underside whitish slightly tinged with red and irrorated with fuscous, a discoidal lunule, indistinct irregularly waved postmedial line, and some points on termen.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♂; U.S.A., N. & E. States, New York, Lewis Co. (*W. W. Hill*), 1 ♂ type. *Exp.* 42 millim.

2402. Graptolitha disposita. (Plate CII. fig. 10.)

Lithophane disposita, Morr. Bull. Buff. Soc. Nat. Sci. ii. p. 116 (1874); Smith, Cat. Noct. N. Am. p. 227.

Head and thorax grey-brown; palpi streaked with black at sides; frons with black bar; tegulæ with black line near upper edge; patagia with slight black outer edge and some black scales near upper edge; tibiæ streaked with black; abdomen grey-brown irrorated with fuscous. Fore wing pale grey-brown slightly suffused in parts with rufous; a prominent black streak below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line indistinctly double, angled outwards in the interspaces, very strongly below the cell, and inwards to slight black points on the veins; claviform small, defined by black, sometimes connected with the postmedial line by a slight streak; orbicular and reniform large, defined by black, the former oblique elliptical; a slight medial line oblique from costa to lower angle of cell, then waved; postmedial line double at costa, bent outwards below costa, then dentate and produced to double points on the veins, incurved below vein 4; subterminal line pale defined on inner side by slight

dentate rufous marks, angled outwards at vein 7 and dentate at veins 4, 3, with blackish patches beyond it below apex and above tornus; the veins of terminal area slightly streaked with black; a terminal series of black points. Hind wing fuscous brown; the cilia pale at tips; the underside whitish irrorated with brown, a black discoidal lunule and indistinct curved postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♂; U.S.A., Massachusetts, Cambridge, 1 ♂, 1 ♀, type, Newton, 1 ♂, New York, Schenectady (*Lintner*), 1 ♂, 1 ♀. *Exp.* 40 millim.

2403. Graptolitha oriunda. (Plate CII. fig. 11.)

Lithophane oriunda, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 160 (1874); Smith, Cat. Noct. N. Am. p. 228.

♂. Head and thorax purplish red-brown; palpi streaked with black at sides; frons with black bar; tegulæ with black line near tips defined by white behind; tibiæ streaked with black; abdomen purplish red-brown, pale at base. Fore wing purplish red; the costal area suffused with white to beyond middle; a slight black streak below base of cell, defined by white above; subbasal line represented by two oblique striæ from costa; antemedial line represented by two oblique striæ from costa, then single, dentate, indistinct; claviform large, defined by black; orbicular and reniform with prominent white annuli defined by black, the former oblique elliptical, the latter oblique oblong; a medial striga from costa; postmedial line represented by two striæ from costa, then indistinct, single, dentate and produced to black and white points on the veins, bent outwards below costa and oblique below vein 4, some white points beyond it on costa; subterminal line represented by a series of small white spots defined on inner side by slight dentate rufous marks, somewhat angled outwards at vein 7 and excurved at middle; the extremity of veins with slight dark streaks. Hind wing red-brown, the cilia rufous; the underside pale tinged with red and irrorated with brown, a discoidal spot, sinuous postmedial line, and some dark striæ on termen.

Hab. Canada, 1 ♂ type; U.S.A., Wisconsin. *Exp.* 38 millim.

2404. Graptolitha ferrealis. (Plate CII. fig. 12.)

Lithophane ferrealis, Grote, 6th Rep. Peab. Acad. Sci. p. 32 (1874); Smith, Cat. Noct. N. Am. p. 227.

Head and thorax purplish rufous mixed with white; palpi streaked with black at sides; frons with black bar; tegulæ with black line near tips; patagia with some black scales near upper edge; tegulæ streaked with black; abdomen rufous dorsally suffused with fuscous. Fore wing rufous tinged with fuscous, the costal area and base of inner margin greyish white; a slight dark streak below base of costa; the subbasal line represented by two oblique striæ from costa; antemedial line indistinctly double, very

strongly angled outwards in the interspaces and inwards to white points on the veins; claviform small, defined by ochreous and brown; orbicular and reniform whitish, their centres tinged with brown, the former very oblique, produced to a point below, sometimes confluent with the latter, which is constricted at middle and angled inwards on median nervure; a medial striga from costa; postmedial line double at costa, strongly bent outwards below costa, then highly dentate and produced to black and white points on the veins, oblique below vein 4, and angled inwards in submedian fold; subterminal line represented by small ochreous-grey V-shaped marks defined on inner side by dentate rufous marks, angled outwards at vein 7 and dentate at veins 4, 3; the veins of terminal area streaked with black, a terminal series of black points. Hind wing dark reddish brown, the cilia pale at tips; the underside whitish tinged with purplish pink and irrorated with brown, a discoidal spot and irregularly dentate postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 2 ♂; U.S.A., Maine, New York, 1 ♂, 3 ♀ type. *Exp.* 44–48 millim.

*2405. Graptolitha gausapata.

Lithophane gausapata, Grote, Papilio, iii. p. 77 (1883); Smith, Cat. Noct. N. Am. p. 227.

Dull purple-red; frontal tuft slightly darker below; abdomen dull red. Fore wing slightly suffused with grey; the ante- and postmedial lines brown, oblique towards costa, the former very strongly angled outwards in submedian fold and defined by whitish on outer side, connected with the latter by a slight brown streak; reniform represented by a rusty yellow stain. Hind wing dull red; the underside with brown discoidal spot.

Hab. U.S.A., California, Soda Springs. *Exp.* ? This species is unknown to me.

2406. Graptolitha petulca. (Plate CII. fig. 13.)

Lithophane petulca, Grote, 6th Rep. Peab. Acad. Sci. p. 31 (1874); Smith, Cat. Noct. N. Am. p. 227.

Head and thorax grey mixed with rufous; palpi streaked with black at sides; frons with black bar; tegulæ with black line near tips; patagia with some black scales near upper edge; tibiæ streaked with black; abdomen rufous dorsally tinged with fuscous. Fore wing whitish grey tinged with rufous; a slight streak below base of cell; subbasal line represented by double oblique striæ from costa; antemedial line indistinctly double, strongly angled outwards in the interspaces and inwards to double black points on the veins, in submedian fold connected with the postmedial line by a slight fuscous streak; orbicular and reniform with pale annuli defined by brown, the former oblique, open above, its lower extremity produced to a point, the latter constricted at middle and

angled inwards on median nervure; traces of a medial shade; postmedial line double at costa, then indistinct, bent outwards below costa, strongly dentate and produced to double black points on the veins, oblique below vein 4 and angled inwards in submedian fold almost to the antemedial line; subterminal line indistinct, pale, defined on inner side by small rufous dentate marks, angled outwards at vein 7 and dentate at veins 4, 3; the veins streaked with black towards termen; a terminal series of black points. Hind wing fuscous brown, the cilia rufous, whitish at tips; the underside whitish irrorated with brown, a discoidal spot and sinuous postmedial line.

Hab. U.S.A., N.E. States, Maine, 1 ♂, 2 ♀, type. *Exp.* 44 millim.

2407. Graptolitha signosa. (Plate CII. fig. 14.)

Xylina signosa, Wlk. xi. 627 (1857); Smith, Cat. Noct. N. Am. p. 227.

Head and thorax reddish brown mixed with grey and irrorated with black; palpi streaked with dark brown at sides; frons with brown bar; tegulæ with black line near tips; patagia with some black scales near upper edge; thorax with dorsal red-brown streak; tibiæ streaked with black; abdomen pale reddish brown irrorated with fuscous. Fore wing brownish grey tinged with rufous, the veins with slight dark streaks; a slight streak below base of cell; subbasal line represented by double oblique striæ from costa and cell; antemedial line indistinctly double, strongly angled outwards in the interspaces and inwards to double black points on the veins, connected with the postmedial line by a blackish streak in submedian fold; orbicular incompletely defined by brown, irregularly oblique elliptical; reniform represented by a curved brown streak below end of cell; traces of a medial shade towards costa; postmedial line double at costa, bent outwards below costa, then highly dentate and produced to double black points on the veins, oblique below vein 4; subterminal line indistinct, pale, defined on inner side by a series of dentate rufous marks, angled outwards at vein 7 and dentate at veins 4, 3; cilia rufous intersected with grey. Hind wing reddish brown, the cilia whitish at tips; the underside whitish irrorated with brown, a discoidal spot and sinuous postmedial line.

Hab. CANADA; U.S.A., N.E. States (*Doubleday*), 1 ♀ type, New York, Schenectady (*Lintner*), 1 ♂, 1 ♀. *Exp.* 44–48 millim.

2408. Graptolitha amanda. (Plate CII. fig. 15.)

Xylina amanda, Smith, Trans. Am. Ent. Soc. xxvii. p. 24 (1900); Dyar, Cat. Lep. N. Am. p. 170.

♀. Head and thorax white tinged with brown and slightly irrorated with black; palpi streaked with brown; frons with brown bar; the crests on vertex of head and prothorax tipped with

rufous; outer edge of patagia rufous at base; abdomen brownish white irrorated with black, the dorsal crests blackish at tips. Fore wing white irrorated with brown and fuscous, the cell and area beyond it tinged with ochreous, the area beyond end of cell suffused with fuscous; a sinuous black streak below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line indistinctly double, very strongly angled outwards in the interspaces and inwards on the veins; orbicular represented by traces of an oblique elliptical white annulus, the reniform by a rufous point at lower angle of cell with curved white and black line below it; a medial striga from costa; postmedial line represented by two strigæ from costa, then almost obsolete, strongly bent outwards below costa, then oblique, dentate and produced to double black points on the veins; the subterminal line represented by a series of indistinct dentate red-brown marks; the terminal area with slight dark streaks on the veins; a terminal series of slight black lunules; cilia chequered rufous and white. Hind wing yellowish white thickly irrorated with fuscous; cilia white at tips; the underside white slightly irrorated with brown, a small discoidal spot and postmedial series of minute streaks on the veins.

Ab. 1. Paler; fore wing without the fuscous suffusion; hind wing hardly tinged with fuscous except on terminal area.

Hab. Canada, Manitoba, Alberta, Calgary (*Wolley-Dod*), 1 ♀, Vancouver; U.S.A., 1 ♀, New Hampshire, Franconia, Washington, Pullman, California. *Exp.* 39–42 millim.

2409. Graptolitha pruinosa.

Xylina pruinosa, Butl. A.M.N.H. (5) i. p. 197 (1878); id. Ill. Het. B.M. ii. p. 34, pl. 31. f. 6.

Head and thorax greenish grey mixed with brown; palpi tinged with rufous and streaked with black at sides; frons with black bar; tegulæ with black line near tips; patagia with black outer edge and some black scales near upper edge; abdomen grey mixed with brown; pectus, legs, and ventral surface of abdomen tinged with rufous; tibiæ streaked with black. Fore wing grey tinged with greenish brown; a black streak below base of cell defined by white above; subbasal line represented by two striæ from costa and one from cell; antemedial line indistinct, double, oblique, minutely dentate; claviform defined by black at extremity, connected by a slight black streak with the postmedial line; orbicular and reniform well developed, defined by black, the former oblique elliptical, the latter constricted at middle; traces of a medial line oblique from costa to median nervure, then waved; postmedial line indistinctly double, bent outwards below costa, then dentate, excurved to vein 4, then incurved; subterminal line whitish slightly defined by brown on inner side, excurved at vein 7 and middle; a terminal series of black points. Hind wing whitish

suffused with brown, especially on the veins and terminal area; the underside whitish, the costal and terminal areas irrorated with brown, a small discoidal spot and traces of a postmedial line.

Ab. 1. Whiter, slightly tinged with green.

Ab. 2. Lilacine grey without green tinge.

Ab. 3. Lilacine grey suffused with fuscous, especially on medial area.

Hab. Japan, Hakodate (*Andrews*), 1 ♂, Yokohama (*Jonas*, *Pryer*), 2 ♂, 7 ♀ type. *Exp.* 36–40 millim.

*2410. Graptolitha brachyptera.

Xylina brachyptera, Staud. Rom. Mém. vi. p. 520, pl. 9. f. 9 (1892); id. Cat. Lep. pal. p. 211.

♂. Head and thorax grey-white; tegulæ with slight dark medial line; abdomen pale brownish. Fore wing grey-white; subbasal line represented by black striæ from costa and cell; a sinuous black streak in base of submedian fold, extending to beyond and not connected with the subbasal line; antemedial line represented by double black striæ from costa, then single, slight, oblique, waved; claviform defined by black and with black streak from it to postmedial line; orbicular and reniform with brownish centres and white annuli defined by black, the former rather oblique elliptical, the latter constricted at middle; medial line represented by a black striga from costa and some fuscous suffusion in cell; postmedial line represented by double black striæ from costa, then single, slight, strongly bent outwards below costa, then dentate, incurved below vein 4; subterminal line formed of slight brown lunules, somewhat angled outwards at vein 7; a terminal series of slight black lunules. Hind wing pale brown; the cilia whitish with a brown line through them; the underside dirty white with dark discoidal spot and terminal line.

Hab. E. Siberia, Ussuri. *Exp.* 36 millim. This species is unknown to me.

2411. Graptolitha ornithopus.

Noctua ornithopus, Rott. Naturf. ix. p. 124 (1776); Staud. Cat. Lep. pal. p. 211.

Noctua rhizolitha, Schiff. Wien. Verz. p. 75 (1776); Treit. Schmett. v. 3, p. 21 (1826); Esp. Schmett. iv. pl. 121. f. 6; Hübn. Eur. Schmett., Noct. f. 242; Dup. Lép. Fr. vii. p. 187, pl. 112. f. 3; Steph. Ill. Brit. Ent., Haust. ii. p. 170.

Head and thorax grey-white mixed with pale brown; palpi streaked with black at sides; frons with black bar; tegulæ with black line near tips, with some rufous before it and white beyond it; patagia with black outer edge; pectus tinged with rufous; tibiæ streaked with black; abdomen grey, dorsally irrorated with fuscous, ventrally with rufous. Fore wing grey-white slightly

tinged with reddish brown; a black streak below base of cell defined by whitish above; subbasal line represented by two oblique striæ from costa and one from cell; antemedial line indistinct, double, waved, curved; claviform small, defined by black, with a short streak from it to postmedial line; orbicular and reniform defined by black, the former oblique elliptical, open above and below, the latter rather constricted at middle and angled inwards on median nervure, with some red in its lower part and more strongly defined by black below; traces of a waved medial line; postmedial line indistinctly double, bent outwards below costa, then dentate, excurved to vein 4, then incurved; subterminal line whitish slightly defined by brown on inner side and usually with small dentate black marks at discal and submedian folds, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of black points. Hind wing fuscous brown; cilia white at tips; the underside whitish irrorated with brown, a small black discoidal spot and sinuous postmedial line.

Hab. Britain, Leech Coll.; France; Germany, Zeller and Frey Colls.; Austria; Hungary, Leech Coll.; Switzerland, Frey Coll.; Spain, Leech Coll., Bilbao, Castile, Andalusia; N. Italy; Sweden; Russia, Kurland, Livonia, Zeller Coll.; Balcans; Asia Minor, Pontus; E. Siberia, Ussuri. *Exp.* 34–42 millim.

Larva. Meyr. Brit. Lep. p. 52; Barrett, Lep. Brit. vi. p. 39, pl. 236. f. 1.

Pale blue-green; dorsal and subdorsal lines white, edged with dark green; spiracular line yellowish white, indistinct. Food-plant, Oak. 5–7.

2412. Graptolitha lamda.

Noctua lamda, Fabr. Mant. Ins. p. 174 (1787); Staud. Cat. Lep. pal. p. 211.

Xylina zinckenii, Treit. Schmett. Eur. v. 3, p. 16 (1826); Frr. Neue Beitr. p. 121, pl. 63. f. 3; Dup. Lép. Fr., Suppl. iii. p. 367, pl. 34. f. 2; Herr.-Schäff. Eur. Schmett., Noct. f. 135.

Xylina somniculosa, Hering, Stett. ent. Zeit. 1841, p. 165; Frr. Neue Beitr. pl. 462; Herr.-Schäff. Eur. Schmett., Noct. f. 136.

Xylina rufescens, Men. Motsch. Ét. 1857, p. 23; id. 1858, pl. 2. f. 4.

Lithophane thaxteri, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 196 (1874); Smith, Cat. Noct. N. Am. p. 230.

Head and thorax violaceous grey mixed with brown; palpi streaked with black at sides; frons with lateral black bar; tegulæ with black line near tips; patagia with dark brown outer edges and some black scales near upper edge; tibiæ with black streaks; abdomen purplish red-brown. Fore wing violaceous grey irrorated with dark brown; a black streak below base of cell with some brown suffusion below it; subbasal line represented by double striæ from costa and a striga from cell with some brown suffusion beyond it; antemedial line double at costa, then waved and angled inwards on the veins, a black streak in submedian fold with brown suffusion above it from the ante- to the postmedial line; claviform absent; orbicular and reniform large with slight grey annuli

defined below by curved black streaks, the former oblique V-shaped, open above, the latter constricted at middle and slightly angled inwards on median nervure; a diffused medial line oblique from costa to vein 2 and angled inwards in submedian fold; postmedial line slight, defined by grey on inner side, dentate, bent outwards below costa and oblique below vein 4, angled outwards in discal fold, inwards on vein 2 and very strongly inwards in submedian fold; subterminal line grey defined by dark brown on outer side near discal and submedian folds, dentate, angled inwards to the postmedial line at discal and submedian folds. Hind wing red-brown, the cilia pale purplish red; the underside purplish red irrorated with brown, a small discoidal spot and curved postmedial line.

Ab. 1. *somniculosa*. Fore wing less distinctly marked.

Ab. 2. *zinceni*. Fore wing more variegated and marked with white.

Hab. Canada; U.S.A., Maine, Massachusetts, Newton (*Thaxter*), 4 ♂, 2 ♀, type *thaxteri*, New York, 1 ♂, 1 ♀; Britain; Belgium; Germany, Leech Coll.; Austria; Switzerland; Iceland, Leech Coll.; Scandinavia; Finland, Leech Coll.; Russia, St. Petersburg, Zeller and Frey Colls.; E. Siberia, Amurland. *Exp.* 42–46 millim.

Larva. Meyr. Brit. Lep. p. 52; Barrett, Lep. Brit. vi. p. 36, pl. 235. f. 4.

Bluish green with the lines white; spiracles yellowish edged with brown; ventral surface and feet pale green; head and cervical shield pale yellow-brown, or blue-green irrorated with white; dorsal and subdorsal lines white; a lateral yellow stripe with the black-edged white spiracles on it. Food-plant, *Myrica*. 6.

2413. Graptolitha lepida. (Plate CII. fig. 16.)

Xylina lepida, Lint. Ent. Cont. iv. p. 95 (1878); Smith, Cat. Noct. N. Am. p. 230.

Head and thorax dark brown mixed with grey-white; frons with dark bar; tegulæ with blackish medial line defined by white above; patagia with whitish outer edge; abdomen purplish red-brown irrorated with grey. Fore wing violaceous grey suffused and irrorated with fuscous; some purplish at base of inner margin; a slight black streak below base of cell; subbasal line double filled in with grey, strongly angled inwards on subcostal nervure and ending at submedian fold; antemedial line defined by grey on inner side, angled inwards on the veins; claviform absent; orbicular and reniform large with grey annuli defined by black, the former oblique elliptical, the latter constricted at middle and angled inwards on median nervure; a diffused medial shade; postmedial line defined by grey on outer side, irregularly dentate, bent outwards below costa, incurved below vein 4 and angled inwards in submedian fold almost to the antemedial line; subterminal line formed of blackish lunules, angled outwards at vein 7 and slightly dentate at veins 4, 3. Hind wing pale purplish pink irrorated

with brown; the underside with small discoidal lunule and indistinct curved postmedial line.

Hab. Canada; U.S.A., Maine, New York, Centre (*Hill*), 1 ♂, 1 ♀. *Exp.* 40 millim.

2414. Graptolitha furcifera.

Noctua furcifera, Hüfn. Berl. Ent. Mag. iii. p. 402 (1767); Staud. Cat. Lep. pal. p. 210.
Noctua conformis, Schiff. Wien. Verz. p. 76 (1776); Hübn. Eur. Schmett., Noct. f. 243; Dup. Lép. Fr. vii. p. 182, pl. 112. f. 2.
Noctua bifurca, Esp. Schmett. iv. pl. 131. f. 1 (1788).
Xylina suffusa, Tutt, Brit. Noct. iii. p. 104 (1892).

Head and thorax grey mixed with brown or deep red-brown; frons with black bar; tegulæ with brown line defined by white behind near tips; patagia with dark streak on outer edges; tibiæ with dark streaks; abdomen grey suffused with purple-brown.

Fig. 81.—*Graptolitha furcifera*, ♂. ½.

Fore wing silvery grey more or less strongly suffused and irrorated with reddish brown; a sinuous black streak below base of cell defined by whitish above; subbasal line angled outwards below costa and ending at submedian fold; antemedial line indistinctly double, waved; claviform defined by black, incompletely above, a black streak in submedian fold from it to postmedial line; orbicular indistinctly defined by brown, oblique elliptical; reniform very large, its centre tinged with blood-red, and with grey annulus defined by brown and with curved black mark below, somewhat angled inwards on median nervure; a diffused brown medial shade, oblique from costa to below cell, then angled inwards in submedian fold; postmedial line dentate, bent outwards below costa, incurved below vein 4 and confluent with lower edge of reniform; subterminal line brown, angled outwards at vein 7 and excurved at middle. Hind wing whitish tinged with reddish brown, especially on terminal area; the underside pale, the costal and terminal areas irrorated with purplish red, a discoidal spot and curved somewhat sinuous postmedial line.

Ab. 1. Fore wing pale grey with hardly any brown suffusion.

Ab. 2. *suffusa*. Much darker, the fore wing strongly suffused with dark brown.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Italy; Russia, Urals; W. Siberia, Altai. *Exp.* 42–52 millim.

Larva. Meyr. Brit. Lep. p. 52; Barrett, Lep. Brit. vi. p. 32, pl. 235, f. 3. Greenish brown with darker markings forming a dorsal series of diamond-shaped marks; dorsal, subdorsal, lateral, and spiracular lines pale yellow; a series of oblique black streaks above subdorsal line. Food-plants: Alder and Birch. 5–6.

2415. Graptolitha ingrica.

Xylina conformis, Frr. Neue Beitr. pl. 41 (1833) nec Schiff.
Xylina ingrica, Herr.-Schäff. Eur. Schmett. ii. p. 305, Noct. f. 507 (1845); Staud. Cat. Lep. pal. p. 210.
Xylina cinerosa, Guen. Noct. ii. p. 118 (1852).
Xylina grisea, Græs. Berl. ent. Zeit. 1888, p. 360.
Xylina obscura, Carad. Iris, ix. p. 41 (1896).
Xylina basidiluta, Strand, Arch. Naturv. Christian. xxv. 9, p. 14 (1903).

Head and thorax dark brown more or less mixed with grey; palpi with lateral black streaks; frons with black bar; tegulæ with black line near tips; patagia with some black scales on edges; tibiæ streaked with black, the tarsi with pale rings; abdomen grey-brown tinged with purple-red. Fore wing silvery grey more or less completely suffused with dark brown, sometimes with a slight yellowish tinge; a whitish patch on base of costal area and some purplish red on base of inner margin; a sinuous black streak below base of cell; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line double, waved, the inner line indistinct; claviform well developed, defined by black and filled in with grey, rarely with reddish, a black streak in submedian fold from it to the postmedial line; orbicular and reniform large, defined by black, the former filled in with grey, oblique elliptical, the latter rather quadrate, with reddish centre and grey annulus defined below by a slightly curved black streak; postmedial line defined by grey on outer side, dentate, bent outwards below costa, excurved to vein 4, then incurved to lower edge of reniform, some white points beyond it on costa; subterminal line grey defined by brown on inner side and by slight dentate marks at middle and submedian fold, angled outwards at vein 7 and slightly dentate at veins 4, 3; a terminal series of slight black lunules. Hind wing pale more or less strongly tinged with brown; cilia whitish; the underside whitish, the costal area tinged with rufous and the costal and terminal areas irrorated with brown, a small discoidal lunule and sinuous postmedial line.

Ab. 1. *grisea*. Darker.—E. Siberia.

Ab. 2. *basidiluta*. Fore wing with the basal area paler.—Norway, St. Petersburg.

Hab. France, Alps; Germany; Austria, Leech Coll.; Hungary; Switzerland, Frey Coll.; Norway, Odalen, Frey Coll.; Russia, Livonia, Zeller and Frey Colls., Esthonia, Frey Coll., Kurland, Leech Coll., St. Petersburg, Zeller and Frey Colls.; Rumelia; Kamtschatka;

N.E. Siberia; E. Siberia, Amurland, Ussuri. *Exp.* 46–48 millim.

Larva. Kirby, Butt. & Moths Eur. p. 249.

Green with the lines yellowish white, turning brown before pupating. Food-plants: *Alnus incana* and *A. glutinosa*.

2416. Graptolitha pexata. (Plate CII. fig. 17.)

Lithophane pexata, Grote, 6th Rep. Peab. Ac. Sci. p. 35 (1874); Smith, Cat. Noct. N. Am. p. 230.
Lithophane washingtonia, Grote, Papilio, iii. p. 74 (1883).

Head and thorax black-brown slightly mixed with grey; frons with black bar; tegulæ with black line near tips; patagia with some black scales near edges and white patch at shoulders; tarsi ringed with white; abdomen brown, the dorsal crests blackish, the lateral fringes and ventral surface purplish pink. Fore wing black-brown, slightly suffused and irrorated with grey; a sinuous black streak below base of cell with some yellowish white above it; some purplish red at base of inner margin; subbasal line represented by double black striæ from costa; antemedial line double, waved; claviform well-developed, defined by black, incompletely above, a black streak in submedian fold from it to postmedial line; orbicular and reniform large, with grey annuli defined by black, the former oblique elliptical, the latter with its centre defined by purplish red; postmedial line minutely dentate and produced to slight streaks on the veins, bent outwards below costa, incurved below vein 4 to lower edge of reniform and defined by whitish on outer side below vein 2, some white points on costa beyond it; subterminal line pale reddish defined by brown on inner side, angled outwards at vein 7 and excurved at middle, a whitish spot on it in submedian fold; a fine waved black terminal line. Hind wing whitish uniformly suffused with brown, the cilia tinged with purplish red; the underside pale, slightly tinged with red and irrorated with brown, a discoidal lunule and obliquely curved postmedial line.

Ab. 1. *washingtonia*. Blacker.—Washington.

Hab. Canada (*Norman*), 1 ♀; U.S.A., N.E. & Middle States, Maine, 1 ♀, New York, 5 ♂ type, Washington. *Exp.* 44–46 millim.

2417. Graptolitha ustulata.

Agrotis ustulata, Butl. A.M.N.H. (5) i. p. 162 (1878); id. Ill. Het. B.M. ii. p. 27, pl. 29. f. 10; Staud. Cat. Lep. pal. p. 210.

Head and thorax dark brown, mixed with grey; palpi streaked with black at sides; frons with black bar; tegulæ with black line near tips; patagia with some black scales near edges; tibiæ streaked with black; abdomen grey-brown. Fore wing dark brown suffused with purplish grey; a pale patch at base of costa extending to the sinuous black streak below base of cell; subbasal line double, angled outwards below costa and ending at submedian fold; stigmata with greyish annuli defined by black, the claviform

with its lower edge crossing the double, waved antemedial line; orbicular oblique elliptical; reniform moderate, its centre suffused with rufous; postmedial line dentate, bent outwards below costa and incurved below vein 4 to lower edge of reniform; subterminal line pale defined on inner side by slight dentate brown marks, angled outwards at vein 5 and excurved at middle; a fine waved black terminal line. Hind wing whitish, nearly uniformly suffused with brown; the underside whitish, the costal and terminal areas irrorated with brown, a small discoidal spot and indistinct sinuous postmedial lines.

Hab. Japan, Yokohama (*Pryer*), 4 ♂, 2 ♀ (*Jonas*), 1 ♀ type. *Exp.* 40–44 millim.

*2418. Graptolitha dilatocula. (Plate CII. fig. 18.)

Xylina dilatocula, Smith, Trans. Am. Ent. Soc. xxvii. p. 42 (1900); Dyar, Cat. Lep. N. Am. p. 170.

♂. Head and thorax black with a purplish-grey gloss; frons with black bar; antennæ whitish at extreme base; tegulæ with the basal half brown; pectus clothed with brown hair, irrorated with grey; tarsi ringed with white; abdomen reddish brown, the dorsal crests black. Fore wing black-brown, the medial, postmedial, and terminal areas suffused with purplish grey; subbasal line double, curved, from costa to median nervure; a curved black streak below base of cell defined by some ochreous scales above and with purplish-grey patch above it; antemedial line oblique, slightly waved from costa to submedian fold, then angled inwards on vein 1; claviform large, purplish grey defined by black at extremity; orbicular and reniform large, defined by black, the former rounded, purplish grey with traces of rufous annulus, the latter with its outer part suffused with rufous and with pale lunule in centre; traces of an oblique waved medial line; postmedial line double, filled in with greyish, bent outwards below costa, excurved to vein 4, angled inwards at vein 2, then excurved again; subterminal line grey defined by brown on inner side, excurved at vein 7, slightly dentate at veins 4, 3, and incurved at discal and submedian folds; a waved black terminal line. Hind wing pale red-brown, a discoidal lunule, somewhat sinuous postmedial line, diffused subterminal band, and waved black terminal line; the underside paler, the costal area redder, a prominent discoidal spot and rather diffused postmedial line.

Hab. U.S.A., Washington, California, in U.S. Nat. Mus. *Exp.* 52 millim.

2419. Graptolitha cinerosa. (Plate CII. fig. 19.)

Lithophane cinerosa, Grote, Bull. U.S. Geol. Geog. Surv. Terr. v. p. 202 (1879).

Lithophane grotei, Riley, Papilio, ii. p. 102 (1882); Smith, Cat. Noct. N. Am. p. 229.

Xylina winnipeg, Smith, Trans. Am. Ent. Soc. xxvii. p. 31 (1900).

Head and thorax fuscous irrorated with grey; tegulæ with

blackish line near tips; abdomen grey, irrorated with fuscous. Fore wing grey thickly irrorated and suffused with fuscous; subbasal line double, filled in with white, angled inwards in cell, from costa to submedian fold; antemedial line double, filled in with whitish, excurved in interspaces and angled inwards on the veins; claviform small, defined by black; orbicular and reniform defined by black, the former grey, oblique elliptical and conjoined to an elliptical mark below cell, the latter somewhat constricted at middle and angled inwards on median nervure; a medial shade angled at lower angle of cell; postmedial line double, filled in with whitish, dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, whitish, defined on inner side by small dentate fuscous marks, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of small black lunules. Hind wing uniform yellowish brown, the cilia white at tips; the underside white irrorated with brown, a discoidal spot and sinuous postmedial line.

Hab. Canada; U.S.A., N.E. States to Washington, D.C., and west to Nebraska, New York, Centre (*Lintner*), 4 ♂, 1 ♀ type, Lewis Co. (*W. W. Hill*), 2 ♂, 3 ♀. *Exp.* 46–50 millim.

Larva. Head testaceous, reticulate with greenish. Body with joint 12 enlarged, green; dorsal, subdorsal, lateral, and substigmatal lines white, rather broad, nearly equal. Tubercles white, elevated. Feet green. Feeds on maple &c.—H. G. D.

2420. **Graptolitha laticinerea.** (Plate CII. fig. 20.)

Lithophane laticinerea, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 27 (1874); Smith, Cat. Noct. N. Am. p. 229.

Head and thorax fuscous, mixed with grey; frons with dark bar; tegulæ with black line near tips; tarsi with pale rings; abdomen grey tinged with brown and thickly irrorated with fuscous. Fore wing fuscous grey-brown irrorated with white; a sinuous black streak below base of cell, defined by whitish above; subbasal line represented by double black striæ from costa; antemedial line indistinctly double, filled in with whitish, excurved in the interspaces and angled inwards on the veins; claviform small or moderate, defined by black; orbicular and reniform with grey annuli defined by black, the former oblique elliptical, conjoined to an elliptical spot below cell, the latter somewhat constricted at middle and angled inwards on median nervure sometimes to the elliptical spot; a slight curved medial shade; postmedial line defined by grey on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line greyish defined on inner side by small dentate dark marks, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of slight dark lunules. Hind wing whitish, uniformly suffused with reddish brown; cilia white at tips; the underside whitish irrorated with brown; a discoidal lunule and slightly sinuous postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♂, 1 ♀; U.S.A., N.E. States to Washington, D.C., and west to Nebraska, Massachusetts, Buffalo, 3 ♂, 1 ♂ type. *Exp.* 44–50 millim.

2421. Graptolitha antennata. (Plate CII. fig. 21.)

Xylina antennata, Wlk. xv. 1738 (1858); Saunders, Fruit Insects, p. 138, f. 138; Smith, Cat. Noct. N. Am. p. 228.
Xylina cinerea, Riley, 3rd Rep. Ins. Mo. p. 135, f. 57 (1871).

Head and thorax brown mixed with grey; frons with black bar; tegulæ with black line near tips; patagia with some black scales near upper edge; tibiæ with slight black streaks, the tarsi with pale rings; abdomen grey tinged with brown and irrorated with fuscous. Fore wing purplish brown suffused with silvery grey; a sinuous black streak below base of cell, defined by yellowish above; subbasal line represented by double oblique striæ from costa; antemedial line defined by grey on inner side, angled outwards in the interspaces and inwards on the veins; claviform small or moderate, defined by black; orbicular and reniform with greyish annuli defined by black, the former oblique elliptical, conjoined to a small round spot below cell, the latter somewhat constricted at middle and angled inwards on median nervure; an obscure waved medial line; postmedial line slightly defined by grey on outer side, dentate and produced to slight streaks on the veins, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of slight dentate dark marks, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing pale, nearly uniformly suffused with brown, the cilia whitish at tips; the underside white, slightly tinged with purple and irrorated with brown, a discoidal lunule and sinuous postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♀; U.S.A., N.E. States to Washington, D.C., and west to Nebraska, 7 ♂, 4 ♀, type *cinerea*, 1 ♀, type without locality. *Exp.* 36–48 millim.

Larva. Head testaceous, reticulate with greenish. Body with joint 12 enlarged, green; dorsal line white, narrow, subdorsal broken, lateral obsolete; substigmatal broad, distinct, white, much heavier than the other lines. Tubercles white, slightly elevated. Feet green.—H. G. D.

2422. Graptolitha torrida. (Plate CII. fig. 22.)

Xylina torrida, Smith, J. N.Y. Ent. Soc. vii. p. 228 (1899); Dyar, Cat. Lep. N. Am. p. 170.

♀. Head and thorax blue-grey mixed with fuscous; frons with black bar; tegulæ with strong black medial line, with some rufous before it and slight line near tips; patagia with black outer edge; tibiæ streaked with black; abdomen greyish mixed with brown and tinged with purplish red especially on ventral surface. Fore

wing blue-grey irrorated and in part suffused with fuscous; a black streak below base of cell with some rufous above and below it; subbasal line represented by double striæ from costa; antemedial line double, waved, angled inwards on vein 1; claviform moderate, defined by black; orbicular and reniform with grey annuli defined by black, the former rather oblique elliptical, conjoined to a small round annulus below the cell, the latter somewhat constricted at middle, its centre suffused with rufous; a waved medial line oblique from costa to vein 2, then inwardly oblique; postmedial line indistinctly double, bent outwards below costa, excurved and dentate to vein 3, then oblique; some grey points on costa towards apex; subterminal line grey, defined on inner side by small dentate brown marks, angled outwards at vein 7 and slightly excurved at middle; a terminal series of small black lunules. Hind wing brown, the cilia tipped with white; the underside whitish, tinged with purplish red and irrorated with fuscous, a discoidal lunule and minutely waved postmedial line.

Hab. Canada, N.W. Br. Columbia; U.S.A., Washington, Pullman, 1 ♀, Colorado, Garfield Co., 4000′, California, Soda Springs.
Exp. 44 millim.

Larva. Head testaceous greenish. Body uniformly cylindrical, green; dorsal and substigmatal lines white, narrow, distinct; the other lines reduced to dots about the size of the tubercles. Tubercles white. Feet green. Feeds on wild cherry.—H. G. D.

2423. **Graptolitha atincta.** (Plate CII. fig. 23.)

Xylina atincta, Smith, J. N.Y. Ent. Soc. xiii. p. 206 (1905).

♀. Head and thorax purplish grey mixed with brown; palpi with black streak at sides; frons with black bar above; a whitish line between antennæ; tegulæ with black medial line; patagia with black outer edge; tarsi banded with black; abdomen dull red-brown, ventrally rufous. Fore wing violaceous grey slightly suffused with fuscous brown; a curved black streak below base of cell defined by white above and extending to the subbasal line which is indistinct, double filled in with whitish, angled outwards below costa and in cell; antemedial line double, oblique, waved; claviform slightly defined by black; orbicular white defined by black and with grey centre, lunulate; reniform with grey centre and whitish annulus defined by black, with whitish line in centre and some rufous on lower part; an irregularly waved black medial line with fuscous suffusion on its outer edge; postmedial line defined by greyish on outer side, double at costa, bent outwards below costa, then dentate, excurved to vein 4, then incurved and angled outwards on vein 1, some pale points beyond it on costa; subterminal line indistinct, whitish defined by fuscous on inner side forming dentate marks at discal and submedian folds, angled outwards at vein 7 and excurved at middle; a terminal series of slight black lunules; cilia with a blackish line through them.

Hind wing grey-brown tinged with reddish, the terminal area rather darker; cilia whitish at tips; the underside whitish suffused with rufous and irrorated with brown, a discoidal lunule and diffused curved postmedial line.

Hab. CANADA, Manitoba (*Cartwright*), 1 ♀ co-type. *Exp.* 44 millim.

This is probably a variety of *G. tepida*.

2424. Graptolitha tepida. (Plate CII. fig. 24.)

Lithophane tepida, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 27 (1874); Smith, Cat. Noct. N. Am. p. 229.

Head and thorax violaceous grey mixed with fuscous; palpi streaked with black at sides, frons and vertex of head with black bars; tegulæ with black line near tips; patagia with black outer edge and some black scales near upper edge; pectus tinged with purplish in front; tibiæ and tarsi streaked with black; abdomen grey-brown, the anal tuft and ventral surface tinged with rufous. Fore wing grey-white suffused with silvery fuscous; a curved black streak below base of cell defined by whitish above; subbasal line represented by double black striæ from costa and oblique striga from subcostal nervure to end of streak below cell; antemedial line double, waved, angled outwards above inner margin; claviform moderate, defined by black; orbicular and reniform moderate, defined by black, the former lunulate with grey centre and strong white annulus, the latter with its centre defined by fuscous and some blood-red in lower part; a medial line with diffused fuscous beyond it, oblique from costa to median nervure, then waved; postmedial line dentate and produced to slight streaks on the veins, bent outwards below costa and incurved below vein 4 to lower edge of reniform; subterminal line represented by a series of slight whitish marks with small dentate black marks before them, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing uniform fuscous brown; the underside brown tinged with purplish pink, a small discoidal lunule and obliquely curved postmedial line.

Hab. U.S.A., N. & E. States, Massachusetts, New York, Albany (*Bailey*), 1 ♂, 1 ♀ type, Centre (*Lintner*, *Bailey*), 1 ♂, 2 ♀. *Exp.* 40–44 millim.

2425. Graptolitha baileyi. (Plate CII. fig. 25.)

Lithophane baileyi, Grote, Can. Ent. ix. p. 86 (1877); Smith, Cat. Noct. N. Am. p. 229.

Head and thorax greenish grey mixed with black-brown; palpi streaked with black at sides; frons and vertex of head with black bars; tegulæ with black line near tips; patagia with black outer edge and some black scales near upper edge; tibiæ and tarsi streaked with black; abdomen grey-brown, the anal tuft and

ventral surface tinged with rufous. Fore wing grey or greenish grey irrorated with fuscous; a black streak below base of cell defined by whitish above; subbasal line represented by double striæ from costa and an oblique striga from subcostal nervure to the streak below cell; antemedial line double waved; claviform moderate, more or less completely defined by black; orbicular and reniform large, defined by black, the former oblique elliptical, open above, the latter with some blood-red in its lower part; a more or less developed diffused medial shade, oblique from costa to lower angle of cell; postmedial line indistinctly double, dentate, bent outwards below costa and incurved below vein 4 to lower edge of reniform; subterminal line represented by a series of small black spots, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules. Hind wing uniform fuscous brown; the underside paler tinged with purplish pink and irrorated and suffused with brown, a small discoidal lunule and obliquely curved postmedial line.

Hab. Canada, Ottawa (*Young*), 1 ♂, 1 ♀; U.S.A., New York, Albany (*Bailey*), 1 ♂, 2 ♀ type, Lewis Co. (*W. W. Hill*), 1 ♀. *Exp.* 38–42 millim.

2426. **Graptolitha querquera.** (Plate CII. fig. 26.)

Lithophane querquera, Grote, 6th Rep. Peab. Ac. Sci. p. 34 (1874); id. Bull. Buff. Soc. Nat. Sci. ii. p. 27, pl. 1. f. 5; id. Illustr. Essay, p. 57, pl. 2. f. 21; Smith, Cat. Noct. N. Am. p. 229.

Head and thorax grey-green; palpi streaked with black at sides; frons with black bar; tegulæ with slight dark line near tips; patagia with black outer edge; pro- and metathorax with black spots; tibiæ streaked with black; tarsi black at extremity; abdomen pale red-brown dorsally tinged with fuscous. Fore wing grey-green; a sinuous black streak below base of cell edged with whitish above; subbasal line represented by two striæ from costa and a bar from cell to the basal streak; an indistinct double waved antemedial line; claviform represented by a black point at its extremity; orbicular defined by black bars at sides, open above and below; reniform large, incompletely defined by black and with diffused brown or blackish patch in centre; a strong medial black shade from costa to median nervure and slight waved line from it to inner margin; postmedial line indistinct, double, waved with slight black streaks beyond it on the veins, slightly bent outwards below costa and incurved below vein 4; subterminal line represented by a series of small black spots, developed into paired dentate marks in discal and submedian folds; a terminal series of small black spots. Hind wing uniform fuscous brown; cilia whitish tinged with brown or pinkish; the underside pale tinged with pink and irrorated with brown, a discoidal spot and oblique postmedial line.

Hab. U.S.A., New York, Centre (*W. W. Hill*), 2 ♂, 1 ♀ type, Missouri. *Exp.* 42–44 millim.

2427. Graptolitha viridipallens. (Plate CII. fig. 27.)

Lithophane viridipallens, Grote, Can. Ent. ix. p. 215 (1877); id. Illustr. Essay, p. 57, pl. 2. f. 22; Smith, Cat. Noct. N. Am. p. 229.

♂. Head and thorax grey-green; palpi streaked with black at sides; frons with black bar; tegulæ with slight dark line near tips; patagia with black outer edge; pro- and metathorax with black points; legs irrorated with black; tarsi with black rings; abdomen whitish tinged with brown. Fore wing grey-green; subbasal line represented by double striæ from costa and an obliquely curved line from subcostal nervure to vein 1; antemedial line oblique, waved; claviform absent; orbicular and reniform slightly defined by black, the former kidney-shaped, open above and below, the latter with some fuscous in centre; an oblique diffused waved medial line; postmedial line indistinctly double, minutely waved, slightly bent outwards below costa and incurved below vein 4; a slight dark subterminal line, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing greyish brown, the cilia white; the underside whitish with a faint vinous tinge and brown irroration, a small discoidal spot and curved postmedial line.

Hab. U.S.A., Massachusetts, Newton (*Thaxter*), 1 ♀ type. *Exp.* 42 millim.

2428. Graptolitha lapidea.

Noctua lapidea, Hübn. Eur. Schmett., Noct. f. 382 (1827); Dup. Lép. Fr., Suppl. iii. p. 381, pl. 34. f. 1; Mill. Icones, i. pl. 9. ff. 3–5; Staud. Cat. Lep. pal. p. 211.
Noctua sabinæ, Geyer, Eur. Schmett., Noct. ff. 766–7 (1834).
Xylina cupressivora, Staud. Cat. Lep. Eur. p. 120 (1871).
Xylina leautieri, Boisd. Ind. Meth. Add. p. 6 (1829).

Head and thorax grey mixed with brown; palpi streaked with dark brown at sides; frons with brown bar; tegulæ with brown line near tips; patagia with brown outer edge and some black scales near upper edge; tibiæ streaked with black; abdomen reddish brown tinged with grey. Fore wing whitish irrorated and suffused with brown; a black streak below base of cell; subbasal line represented by an oblique striga from costa; antemedial line forming strong and irregular angles outward in and below cell, then more prominent and very oblique to vein 1, where it terminates, connected in submedian fold by a very short black streak with the postmedial line; orbicular and reniform ill-defined, whitish, connected by a whitish streak on median nervure with a black streak below it, the former oblique elliptical, the latter rather narrow; a slight curved medial shade; postmedial line with dark mark at costa, then indistinct, bent outwards below costa, then strongly dentate, excurved to vein 4, then oblique and highly angled inwards in submedian fold; subterminal line hardly defined except by small dentate brown marks on its inner side, more

prominent above and below vein 5 and above submedian fold, slightly angled outwards at vein 7 and excurved at middle, slight streaks beyond it above veins 6 and 5 and below 2; a terminal series of small spots; cilia intersected by brown. Hind wing pale, almost uniformly suffused with reddish brown; the underside whitish irrorated with brown, a small discoidal spot and indistinct waved postmedial line.

Ab. 1. *sabinæ*. Head, thorax, and fore wing blue-grey without the brown tinge, the last with the markings more distinct.—Valais.

Ab. 2. *cupressivora*. Head, thorax, and fore wing browner, the last more uniform in colour and with the lines less distinct.

Hab. S. France, Zeller, Frey, and Leech Colls; Switzerland, Valais, Frey and Leech Colls.; Spain, Catalonia, Castile; Italy; Balcans; Crete, Leech Coll.; W. Turkestan, Ferghana. *Exp.* 40–48 millim.

Larva. Kirby, Butt. & Moths, Eur. p. 250.

Green with the lines white. Food-plants: Cypress, Juniper; forming a fine silken cocoon on the surface of ground under moss.

2429. **Graptolitha longior.** (Plate CII. fig. 28.)

Xylina longior, Smith, J. N.Y. Ent. Soc. vii. p. 230 (1899); Dyar, Cat. Lep. N. Am. p. 170.

♀. Head and thorax bluish white slightly mixed with fuscous; palpi streaked with black at sides; frons with black bar; tegulæ with strong black medial line defined by rufous in front and white behind and with blackish tips; patagia with black outer edge; tibiæ streaked with black; abdomen brown tinged with grey. Fore wing bluish white slightly irrorated and suffused with fuscous brown; a black streak below base of cell with some brown suffusion above it; subbasal line represented by a very oblique striga from costa; antemedial line rather indistinct, defined by whitish on inner side, dentate, oblique from costa to submedian fold, then with strong oblique black streak to vein 1, where it terminates, connected by a short black streak in submedian fold with postmedial line; orbicular and reniform large, indistinct, whitish, the former elongate elliptical, the latter constricted at middle; a black streak in lower end of cell with some rufous above it and a black streak below end of median nervure produced to short streaks on veins 3, 4; a slight oblique shade from middle of costa to cell; postmedial line very indistinct, defined by whitish on outer side, bent outwards below costa, then dentate, angled inwards in discal fold and oblique below vein 4; a black streak above middle of vein 4, with an oblique fuscous shade from it to termen below apex; subterminal line represented by some small dentate brownish marks near middle; the veins of terminal area slightly streaked with black. Hind wing greyish brown, the cilia tipped with white; the underside whitish irrorated with brown, a small discoidal lunule.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 1 ♀ co-type. *Exp.* 46 millim.

2430. Graptolitha contenta. (Plate CII. fig. 29.)

Lithophane contenta, Grote, Can. Ent. xii. p. 216 (1880); Smith, Cat. Noct. N. Am. p. 228.
Xylina pomona, Smith, J. N.Y. Ent. Soc. vii. p. 230 (1899).

♂. Head and thorax violaceous grey mixed with reddish brown; palpi streaked with brown at sides; frons with brown bar; tegulæ reddish on basal half and with medial brown line; patagia with some black scales near upper edge; tibiæ streaked with black; abdomen pale reddish, dorsally tinged with fuscous. Fore wing violaceous grey suffused with pale reddish brown; the veins with slight dark streaks; a fine black streak below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line rather indistinct, double, highly angled outwards in the interspaces and inwards on the veins; orbicular very faint, whitish with four black points on its edges; reniform represented by a faint flesh-pink mark with some fuscous below it and a more prominent black streak below angle of cell and point beyond angle; a curved medial shade; postmedial line indistinct, strongly bent outwards below costa, then very highly dentate; subterminal line represented by a series of small dentate fuscous marks; a terminal series of slight dark lunules. Hind wing whitish tinged with reddish brown, especially on the veins and terminal area; the underside white tinged with purplish pink and irrorated with brown, a discoidal lunule, sinuous postmedial line, and some slight lunules on termen.

Hab. U.S.A., Washington, California, 1 ♂ type. *Exp.* 44 millim.

*2431. Graptolitha puella. (Plate CII. fig. 30.)

Xylina puella, Smith, Trans. Am. Ent. Soc. xxvii. p. 30 (1900); Dyar, Cat. Lep. N. Am. p. 169.

♀. Head and thorax whitish grey; frons with dark line; tegulæ with blackish line near tips with some rufous before it; patagia with black outer edge; abdomen slightly tinged with rufous. Fore wing whitish grey; subbasal line represented by double black striæ from costa; a black streak below base of cell with some fuscous suffusion above and below it, the costal area above it almost white; antemedial line double, the outer line black, the inner fuscous, nearly erect, irregular, moderately dentate outwards in the interspaces; claviform small, defined by black; orbicular and reniform pale with a yellowish or reddish tinge, the former defined by black, elliptical and extending to well below median nervure, the latter large, defined by black, slightly angled inwards on median nervure; medial shade diffused, blackish or fuscous,

angled outwards at median nervure and slightly darkening lower part of reniform, then approximated to postmedial line, which is double, bent outwards below costa, then the outer line even, the inner lunulate, oblique below vein 4; subterminal line represented by a dark shade at costa, then by a series of dentate dark marks, a terminal series of fuscous lunules. Hind wing pale fuscous with a yellowish tinge; cilia white; the underside whitish with some dark irroration, a large blackish discoidal spot.

Hab. U.S.A., California. *Exp.* 42–44 millim. This species is unknown to me; figured from a drawing from type in the U.S. Nat. Mus.

2432. Graptolitha merceda. (Plate CII. fig. 31.)

Xylina merceda, Smith, Psyche, xi. p. 58 (1904).

♀. Head and thorax purplish grey mixed with fuscous brown; antennæ white at base; tegulæ with dark line near tips; tarsi slightly banded with fuscous; abdomen brownish grey slightly tinged with pinkish. Fore wing purplish grey slightly irrorated with fuscous; a slight black streak below base of cell; subbasal line represented by two slight oblique striæ from costa; a slight oblique streak across cell; antemedial line indistinct, angled outwards in the interspaces and inwards on the veins; claviform slightly defined by blackish; orbicular and reniform defined by blackish, the former whitish connected with a mark below cell, the latter angled inwards on median nervure and with blackish mark in its lower part; an indistinct medial shade oblique from costa to lower angle of cell, where it is angled outwards; postmedial line indistinct, bent outwards below costa, then dentate, oblique below vein 4; subterminal line indistinct, whitish, defined on inner side by small dentate blackish marks, angled outwards at vein 7 and slightly excurved at middle; a terminal series of slight black points. Hind wing whitish suffused and irrorated with brown; cilia whitish; the underside white irrorated with brown and faintly tinged with pink, a black discoidal lunule and sinuous postmedial line.

Hab. Canada, Manitoba (*Cartwright*), 1 ♀ co-type. *Exp.* 44 millim.

2433. Graptolitha unimoda. (Plate CII. fig. 32.)

Xylina unimoda, Lint. Ent. Cont. iv. p. 96 (1878); Smith, Cat. Noct. N. Am. p. 229.

Head and thorax violaceous grey mixed with fuscous; abdomen reddish brown mixed with grey. Fore wing violaceous grey suffused with fuscous; subbasal line indistinct, waved, from costa to submedian fold; antemedial line indistinct, double, filled in with grey, irregularly waved; orbicular whitish defined by fuscous, round, open below and with a curved mark from its lower outer

side; reniform with a slight grey annulus defined by fuscous, somewhat angled inwards on median nervure; a faint, curved, minutely waved medial line; postmedial line slightly defined by grey on outer side, dentate, bent outwards below costa and incurved below vein 4; subterminal line whitish defined by small dentate dark marks on inner side, slightly angled outwards at vein 7 and excurved at middle. Hind wing whitish nearly uniformly suffused with brown; cilia brown at base, white at tips: the underside white slightly tinged with purple and irrorated with brown, a discoidal lunule and sinuous postmedial line.

Hab. Canada: U.S.A., N. & E. States, Vermont, New York, Centre (W. W. *Hill*), 1 ♂, 1 ♀. *Exp.* 46 millim.

2434. Graptolitha vertina. (Plate CIII. fig. 1.)

Xylina vertina, Smith. Psyche, xi. p. 58 (1904).

♂. Head and thorax blue-grey mixed with brown; frons with black bars at sides and above; antennæ white at base; tegulæ with black medial line defined by white above; patagia with black outer edges; tibiæ streaked with black; tarsi banded with black; abdomen pale rufous. Fore wing blue-grey slightly irrorated with fuscous, the veins with slight black streaks; a sinuous black streak below base of cell; subbasal line represented by a slight striga from costa; a diffused fuscous streak across the cell; antemedial line indistinct, double, angled outwards in the interspaces and inwards on the veins, strongly angled outwards in cell; orbicular defined by black, round, open below and connected with a faint mark below cell; reniform defined by black on inner side only and with curved streak defined by black on its lower edge; medial shade oblique, blackish, and prominent from costa to lower angle of cell, then incurved, less distinct; postmedial line hardly traceable, bent outwards below costa, then dentate; some white points beyond it on costa; subterminal line represented by a series of small dentate black marks; a terminal series of slight black lunules. Hind wing grey suffused with pale rufous; cilia white at tips; the underside white tinged with rufous and irrorated with brown, a large dark discoidal lunule and sinuous postmedial line.

Hab. Canada, Br. Columbia, 1 ♂ co-type; U.S.A., Oregon, Corvallis. *Exp.* 48 millim.

2435. Graptolitha ancilla. (Plate CIII. fig. 2.)

Xylina ancilla, Smith. Psyche, xi. p. 57 (1904).

♂. Head and thorax blue-grey mixed with fuscous brown; palpi with black streak at sides; frons with lateral black bars and black bar above; antennæ white at base; tegulæ with medial black line; patagia with black outer edge; tibiæ streaked with black;

tarsi with blackish bands; abdomen pale rufous. Fore wing blue-grey irrorated with fuscous, the veins blackish; a sinuous black streak below base of cell; subbasal line represented by a black striga from costa; an oblique black streak across the cell; antemedial line hardly traceable, angled outwards in the interspaces and inwards on the veins; orbicular and reniform defined by black, the former upright elliptical confluent with a mark below cell, the latter angled outwards at upper extremity and with dark mark in lower part; an oblique blackish medial shade from costa to median nervure; postmedial line almost obsolete, bent outwards below costa, then dentate, oblique below vein 4; subterminal line represented by a series of small dentate black marks; a terminal series of slight black points. Hind wing pale rufous, the veins and terminal line browner; cilia whitish at tips; the underside whitish irrorated with pale brown; a dark discoidal lunule and indistinct sinuous postmedial line.

♀. Fore wing with the orbicular and mark below it smaller.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♀, Manitoba (*Cartwright*), 1 ♂, 1 ♀, Alberta, Calgary, Br. Columbia, Wellington, 1 ♂, Vancouver I. (*J. J. Walker*), 1 ♂. *Exp.* 46–50 millim.

2436. Graptolitha holocinerea. (Plate CIII. fig. 3.)

Xylina holocinerea, Smith, Trans. Am. Ent. Soc. xxvii. p. 28 (1900); Dyar, Cat. Lep. N. Am. p. 171.

Head and thorax blue-grey mixed with black; frons with black bar; tegulæ with black line near tips; patagia with black outer edge and some black scales near upper edge; tibiæ streaked with black, tarsi with black rings; abdomen reddish brown irrorated with dark brown. Fore wing blue-grey irrorated and suffused with fuscous; a black streak below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line excurved in interspaces and very strongly angled inwards on the veins; claviform small, defined by black, or obsolete; orbicular and reniform defined by black, the former round, conjoined below to an elliptical mark, the latter angled inwards on median nervure and sometimes with some rufous in its lower part; postmedial line indistinct, strongly dentate, bent outwards below costa, oblique below vein 4 and touching lower part of reniform; subterminal line represented by a series of small dentate black marks. Hind wing fuscous brown; cilia whitish at tips; the underside whitish tinged with purple and irrorated with brown, a discoidal lunule and indistinct irregular postmedial line.

Hab. Canada, Manitoba, Br. Columbia, Wellington (*Bryant*), 1 ♂, 1 ♀, Vancouver; U.S.A., Washington, Pullman, California, Sierra Nevada (*Walsingham*), 2 ♀. *Exp.* 52 millim.

2437. Graptolitha fletcheri. (Plate CIII. fig. 4.)

Xylina fletcheri, Smith, Psyche, xi. p. 56 (1904).

♀. Head and thorax blue-grey mixed with fuscous; frons with lateral black bars and black bar above; antennæ white at base; tegulæ with medial black line; patagia with black outer edge; tibiæ streaked with black, the tarsi banded with blackish; abdomen pale rufous. Fore wing blue-grey irrorated with fuscous, the veins blackish; a sinuous black streak below base of cell; subbasal line represented by an oblique striga from costa; antemedial line indistinctly double, strongly angled outwards in the interspaces and inwards on the veins and in submedian fold; claviform absent; orbicular and reniform hardly defined, the former rather triangular with two fuscous points in centre and no mark below cell, the latter angled outwards at upper extremity and with fuscous mark in lower portion; an oblique blackish medial shade from costa to median nervure; postmedial line hardly traceable, bent outwards below costa, then dentate; subterminal line represented by a series of small dentate black marks; a terminal series of slight black points. Hind wing pale fuscous brown tinged with rufous, the veins and terminal line browner; cilia whitish at tips; the underside whitish tinged with pink and irrorated with brown, a dark discoidal lunule and diffused postmedial line.

Hab. Canada, Ottawa (*Fletcher*), 2 ♀ co-type. *Exp.* 46 millim.

2438. Graptolitha georgi. (Plate CIII. fig. 5.)

Lithophane georgii, Grote, Can. Ent. vii. p. 188 (1875); Smith, Cat. Noct. N. Am. p. 228.

Head and thorax blue-grey mixed with fuscous; frons with black bar; tegulæ with black line near tips; patagia with black outer edge; tibiæ streaked with black; abdomen reddish brown, dorsally irrorated with fuscous. Fore wing blue-grey, irrorated and suffused with fuscous; some pale purplish at base of inner margin; a sinuous black line below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line indistinctly double, strongly dentate; claviform absent; orbicular and reniform moderate, defined by black, the former rounded, conjoined to a small elliptical spot below cell, the latter very slightly angled inwards on median nervure and with brownish mark in its lower part; most distinct from costa to middle of cell; postmedial line very indistinct, dentate, bent outwards below costa and oblique below vein 4; the veins of terminal area finely streaked with black; a subterminal series of small dentate black marks. Hind wing pale, uniformly suffused with reddish brown; cilia white at tips; the underside white tinged with purple and irrorated with brown, a small discoidal lunule and traces of a sinuous postmedial line.

Hab. Canada, Ontario, Orillia (*Norman*), 1 ♂ type; U.S.A., N. & E. States, Maine, New York. *Exp.* 50 millim.

G. emarginata, *vertina*, *ancilla*, *fletcheri*, and *holocinerea* are probably all varieties of this species.

2439. Graptolitha emarginata. (Plate CIII. fig. 6.)

Xylina emarginata, Smith, Trans. Am. Ent. Soc. xxvii. p. 28 (1900); Dyar, Cat. Lep. N. Am. p. 171.

♀. Head and thorax violaceous grey mixed with fuscous; palpi streaked with blackish at sides; frons with blackish bar; tegulæ with black line near tips; patagia with black outer edge and some black scales near upper edge; tibiæ streaked with black, tarsi with black rings; abdomen rufous irrorated with dark brown. Fore wing violaceous grey irrorated and suffused with fuscous; a black streak below base of cell; subbasal line represented by double striæ from costa; antemedial line indistinctly double, excurved in the interspaces and very strongly angled inwards on the veins; orbicular and reniform defined by black, the former round, open below and with a curved mark below it; postmedial line indistinct, dentate, bent outwards below costa and incurved below vein 4 to lower edge of reniform; subterminal line represented by a series of small dentate black marks. Hind wing pale uniformly suffused with reddish brown; cilia white at tips; the underside white slightly tinged with purple and irrorated with brown, a discoidal lunule and traces of a postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♀. *Exp.* 46 millim.

2440. Graptolitha oregonensis. (Plate CIII. fig. 7.)

Lithophane oregonensis, Harv. Can. Ent. viii. p. 55 (1876); Smith, Cat. Noct. N. Am. p. 228.

♂. Head and thorax violaceous whitish tinged with red-brown; frons with blackish bars at sides and above; antennæ white at base; tegulæ with black medial line; patagia with black outer edge; tibiæ streaked with black, the tarsi banded with black; abdomen pale rufous. Fore wing bluish white slightly tinged with fuscous, the basal costal area whiter, the veins slightly streaked with black; a sinuous black streak below base of cell; subbasal line represented by a black point on costa; an oblique fuscous streak across cell; antemedial line represented by double oblique striæ from costa, angled outwards in cell, then almost obsolete; claviform slightly defined by black; orbicular white defined by black, upright elliptical and confluent with a mark below cell; reniform white defined by black, its centre suffused with rufous; a blackish patch in cell between the stigmata; a faint incurved medial shade from cell to inner margin; postmedial line obsolete;

some white points on costa before the subterminal line, which is represented by a series of small fuscous dentate marks angled outwards at vein 7; a terminal series of slight black striæ. Hind wing whitish uniformly suffused with pale rufous; cilia whitish at tips; the underside white tinged with rufous and slightly irrorated with brown, a large blackish discoidal lunule.

Hab. U.S.A., Oregon, Colorado, California (*Kemp*), 1 ♂. *Exp.* 46 millim.

Larva. Head testaceous, reticulate with greenish. Body uniformly cylindrical, green; dorsal, subdorsal, and substigmal lines narrow, broken, alike; the substigmatal line may be spotted with red. Tubercles white. Feet green. Feeds on oak.—H. G. D.

2441. Graptolitha merci.

Xylina merckii, Rmbr. Ann. Soc. Ent. Fr. i. p. 293, pl. 9. f. 6 (1832); Dup. Lép. Fr., Suppl. iii. p. 423, pl. 37. f. 4; Staud. Cat. Lep. pal. p. 211.
Noctua ripagina, Geyer, Eur. Schmett., Noct. f. 840 (1834).
Noctua simplex, Frr. Neue Beitr. iii. pl. 255. f. 1 (1839).

Head and thorax grey mixed with fuscous; tegulæ with black medial line; prothoracic crest tipped with rufous; tibiæ streaked with black; abdomen reddish grey-brown. Fore wing violaceous grey irrorated and suffused with fuscous; the veins streaked with black; a fine black streak below base of cell; subbasal line represented by two oblique striæ from costa; antemedial line very strongly angled outwards in the interspaces, in submedian fold and above inner margin to the postmedial line, and inwards on the veins; reniform represented by a curved streak below end of cell; postmedial line strongly dentate, indistinct except below vein 2, bent outwards below costa, excurved to vein 4, then strongly angled inwards in submedian fold and outwards on vein 1; slight oblique subterminal shades from below apex and vein 2. Hind wing grey-brown with a slight reddish tinge; cilia white at tips; the underside whitish irrorated with brown, a discoidal spot and somewhat dentate postmedial line.

Hab. S. France, 1 ♂, 1 ♀; Corsica; Switzerland, ? Valais; Hungary; Bulgaria. *Exp.* 50 millim.

Larva. Kirby, Butt. & Moths Eur. p. 250.

Yellowish green dotted with white; the lines yellow. Food-plant, Alder.

*2442. Graptolitha itata. (Plate CIII. fig. 8.)

Xylina itata, Smith, J. N.Y. Ent. Soc. vii. p. 231 (1899); Dyar, Cat. Lep. N. Am. p. 170.

♀. Head and thorax grey-white with slight dark irroration; abdomen pale brownish. Fore wing grey-white with slight dark irroration, the markings almost obsolete, subbasal line absent; antemedial line excurved in cell, angled outwards in submedian

fold, then strongly inwards, obsolete below vein 1, sometimes defined by a few white scales; orbicular and reniform just traceable, the former elongate elliptical, defined by brown, the latter narrow with pale annulus, with a blackish point below; median shade broad at costa, narrowing to median nervure, then obsolescent, crossed by a slight dark streak in submedian fold to the postmedial line, which is faint, brownish, bent outwards below costa, then crenulate, oblique, and somewhat more distinct below vein 4; subterminal line only defined by a slight triangular shade from termen below apex ending in a black point on postmedial line between veins 4, 5, and another triangular shade ending in a blackish point below vein 2; cilia brownish with a pale line through them. Hind wing brownish grey, the veins slightly darker; a faint discoidal spot; a fine dark terminal line; cilia white; the underside grey with some dark irroration and a slight discoidal spot.

Hab. U.S.A., Colorado. *Exp.* 35–37 millim. This species is unknown to me, figured from a drawing from type in Coll. J. B. Smith.

2443. Graptolitha fagina. (Plate CIII. fig. 9.)

Lithophane fagina, Morr. Bull. Buff. Soc. Nat. Sci. ii. p. 115 (1874); Smith, Cat. Noct. N. Am. p. 228.

Head and thorax pale violaceous grey mixed with fuscous; frons with dark bar; tegulæ with blackish line near tips; tibiæ streaked with black; tarsi brown with pale rings; abdomen brownish white irrorated with fuscous, the lateral and anal tufts tinged with rufous. Fore wing pale violaceous grey finely irrorated with fuscous; the costal area suffused with white to beyond middle; the veins finely streaked with black; subbasal line represented by an acutely dentate mark from base of costa; antemedial line fine, extremely highly and irregularly dentate, the teeth in and below cell bidentate at tips; orbicular and reniform obsolete; black streaks in upper and lower part of cell and a short streak in middle of cell; postmedial line fine, extremely highly dentate, in submedian fold connected with the antemedial line; a subterminal series of slight dentate dark marks, except towards costa and inner margin. Hind wing yellowish white tinged with brown, especially on the veins and terminal area; the underside white, the costal and terminal areas irrorated with brown, a discoidal spot and irregular postmedial line showing through to upper side.

Hab. U.S.A., Maine, 1 ♂, Massachusetts, Newton (*Thaxter*), 1 ♀, New York, Centre (*Hill*, *Bailey*), 1 ♂, 3 ♀. *Exp.* 46–50 millim.

Genus XYLINA.

	Type
Xylena, Ochs. Schmett. Eur. iv. p. 85 (1816), non descr.	*vetusta.*
Xylina, Treit. Schmett. Eur. v. (3) p. 3 (1826)	*vetusta.*
Anchocelis Hübn. Verz. p. 242 (1827)	
Calocampa, Steph. Ill. Brit. Ent., Haust. ii. p. 172 (1829)	*exoleta.*

Proboscis fully developed, palpi porrect, thickly scaled, short and not reaching beyond the large frontal tuft; eyes rounded; antennæ of male ciliated; tegulæ produced to a dorsal ridge; thorax quadrately scaled, clothed with hair and hair-like scales, with some large scales near upper edge of patagia. Prothorax without distinct crest, metathorax with crest; pectus and femora clothed with long hair, fore tarsi with the spines strong; abdomen rather flattened dorsally, clothed with rough hair on dorsum and with lateral tufts of hair. Fore wing rather long and narrow, the inner margin lobed near base, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell, 5 descurrent from below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base.

A. Fore wing with the subterminal line dentate at veins 4, 3.
  a. Fore wing with the orbicular obsolescent, with obliquely placed rufous points in it.
    a^1. Fore wing with the black streak above vein 4 extending to reniform ..... *rupera.*
    b^1. Fore wing with the black streak above vein 4 not extending to reniform ..... *vetusta.*
  b. Fore wing with the orbicular well defined.
    a^1. Fore wing with the orbicular small and closely approximated to reniform.
      a^2. Fore wing with ochreous lunule on outer edge of reniform.
        a^3. Fore wing with the ochreous suffusion beyond the cell extending to apex ..... *curvimacula.*
        b^3. Fore wing with the ochreous suffusion beyond the cell not extending to apex.
          a^4. Head and tegulæ bright rufous ..... *brillians.*
          b^4. Head and tegulæ ochreous tinged with rufous. *cineritia.*
      b^2. Fore wing with grey lunule on outer edge of reniform ..... *brucei.*
    b^1. Fore wing with the orbicular larger and further from reniform.
      a^2. Hind wing with the base pale ..... *exoleta.*
      b^2. Hind wing with the base dark ..... *fumosa.*
B. Fore wing with the subterminal line not dentate at veins 4, 3 ..... *rufa.*

2444. Xylina nupera. (Plate CIII. fig. 10.)

Calocampa nupera, Lint. Bull. Buff. Soc. Nat. Sci. ii. p. 188 (1874); Smith, Cat. Noct. N. Am. p. 235.

Head and basal half of tegulæ ochreous tinged with rufous; palpi, lower part of frons, and lateral bars across frons purple brown; tegulæ with black medial line with whitish line before it; tips of tegulæ and thorax purple-brown; patagia whitish at base on outer edge; pectus and legs ochreous and purple-brown; abdomen ochreous tinged with rufous, the ventral surface dark. Fore wing

ochreous suffused with rufous, the inner area darker, the lower part of cell and area just below it grey-white; a strong black streak below lower part of cell; antemedial line double, indistinct on costal half, then more prominent, very strongly angled outwards in the interspaces, especially above inner margin, and inwards on the veins, in cell almost to base, some black scales on its inner edge on costal half; claviform represented by two black streaks between ante- and postmedial lines; orbicular very indistinct, oblique, irregular, defined by some black scales and with two brown marks in centre; reniform narrow and constricted at middle, with whitish centre defined by rufous and ochreous annulus incompletely defined by black, some rufous suffusion beyond it; postmedial line very indistinct, strongly and irregularly dentate and produced to black points on its veins, bent outwards below costa, strongly incurved in discal fold and strongly bidentate inwards in submedian interspace, some white points beyond it on costa; a black streak above vein 4 to the subterminal line, which is ochreous, angled outwards at vein 7 and dentate to termen on veins 4, 3, cilia dark brown. Hind wing pale rufous suffused with fuscous except on basal and inner areas; cilia pale rufous; the underside ochreous suffused with rufous, the veins irrorated with fuscous; a black discoidal lunule and a somewhat dentate fuscous postmedial line, excurved below costa, then oblique, some slight lunules on termen.

Hab. Canada, Hudson's Bay (*Barnston*), 1 ♂, E. Canada (*Norman*), 1 ♀, Orillia (*Bush*), 1 ♀, Alberta, Calgary (*Wolley-Dod*), 1 ♂; U.S.A., South to Distr. Columbia and West to Nebraska, Massachusetts, Newton (*Thaxter*), 2 ♀. *Exp.* 60–66 millim.

Larva. Head green. Body brilliant apple-green, more rarely brown, lighter intersegmentally. Stigmatal band narrow, black above, greenish white below. Tubercles white; spiracles orange; thoracic feet reddish, the abdominal ones green.—H. G. D.

2445. Xylina vetusta.

Noctua vetusta, Hübn. Eur. Schmett., Noct. f. 459 (1827); Dup. Lép. Fr. vii. p. 159, pl. cxi. f. 1; Steph. Ill. Brit. Ent., Haust. ii. p. 174; Staud. Cat. Lep. pal. p. 211.

Head and base of tegulæ and shoulders ochreous tinged with rufous; palpi and lower part of frons deep rufous; the rest of thorax deep purple-brown, some rufous lines on base of tegulæ and a black medial line; the scales near upper edge of patagia and the metathoracic crest blackish; pectus and legs ochreous and rufous; abdomen ochreous tinged with rufous, the ventral surface rufous. Fore wing ochreous tinged with rufous or grey-white, the inner half suffused with purplish rufous; antemedial line double, indistinct on costal half, very highly angled outwards in the interspaces and inwards on the veins; claviform represented by a patch of dark suffusion; orbicular represented by two or three obliquely-placed points with traces of a waved line round their outer side;

reniform constricted at middle, defined by black and its centre by purple-brown, some blackish suffusion between it and postmedial line, which is very indistinct, dentate and produced to streaks on the veins, obsolete towards costa and angled inwards in submedian fold; some white points on costa towards apex; a prominent black streak above vein 4 to the subterminal line, which is pale defined by red-brown suffusion on inner side, angled outwards at vein 7 and

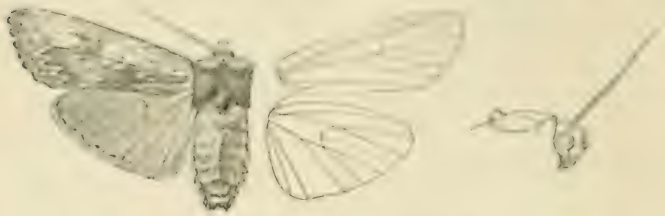


Fig. 82.—*Xylina vetusta*. ♂. ½.

dentate nearly to termen at veins 4, 3; terminal area suffused with red-brown except at apex; a series of black points just before termen; cilia chequered ochreous or greyish and black. Hind wing ochreous uniformly suffused with red-brown; cilia whitish at tips; the underside pale ochreous, the costal and terminal areas slightly tinged with brown, a black discoidal lunule and oblique minutely waved brown postmedial line.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; ?Spain; N. Italy; Corfu; Russia, Livonia, Zeller Coll., St. Petersburg, Zeller Coll.; Asia Minor, Pontus; W. Turkestan, Tarbagatai Mts., Issyk Kul; W. Siberia, Altai; E. Turkestan, Ili; E. Siberia. *Exp.* 52–62 millim.

Larva. Meyr. Brit. Lep. p. 50; Barrett. Lep. Brit. vi. p. 58, pl. 237. f. 2. Green, lateral line yellow, with a pair of confluent white black-edged dots above it on each segment: spiracular line red, sometimes interrupted, white-edged below, marked by triplets of white black-edged dots. Food-plants: *Carduus*, *Silene*, *Ononis*, &c. 5–7.

2446. Xylina curvimacula. (Plate CIII. fig. 11.)

Calocampa curvimacula, Morr. Bull. Buff. Soc. Nat. Sci. ii. p. 191 (1874); Smith, Cat. Noct. N. Am. p. 236.

Head and tegulæ ochreous tinged with rufous; palpi, lower part of frons and lateral bars on frons purplish rufous; thorax deep rufous; patagia white at base on outer side; pectus and legs ochreous, rufous, and purplish; abdomen ochreous suffused with rufous. Fore wing pale ochreous, the inner half suffused with purplish rufous, the medial costal area with rufous; some black points at base; a prominent black streak below lower part of cell; antemedial line double, triple in cell, very strongly angled outwards

in the interspaces and inwards on the veins, in cell almost to base; orbicular elliptical, fuscous, its centre and circumference defined by black except above, closely approximated to the reniform, which is represented by a strongly curved ochreous lunule bidentate above, incompletely defined by rufous, and with two black lines on its inner side; postmedial line represented by a double series of black points with traces of a highly dentate line between them, bent outwards below costa, then oblique; subterminal line ill-defined, somewhat dentate, ochreous with some brown suffusion on inner side, hardly traceable on the ochreous area. Hind wing ochreous wholly suffused with fuscous; cilia ochreous tinged with rufous; the underside ochreous tinged with rufous and irrorated with fuscous, a black discoidal lunule, diffused somewhat dentate postmedial line, and some striæ on termen.

Hab. Canada (*Norman*), 1 ♂, Calgary (*Wolley-Dod*), 1 ♀; U.S.A., N. & E. States, Massachusetts, Newton (*Thaxter*), 1 ♂, 2 ♀, New York, Centre (*Lintner*), 1 ♂, Oregon, Portland. *Exp.* 48–54 millim.

Larva. Head scarcely bilobed, shining light brown with dark brown reticulations, the sutures pale. Body sordid greenish brown, frosted in oblique light, finely obscurely mottled with oblique somewhat tessellated brown shades subdorsally. Dorsal line narrow, whitish, obscure, brown-edged. Shields concolorous, not chitinized; spiracles white, black rimmed; feet pale.—H. G. D.

*2447. Xylina brillians. (Plate CIII. fig. 12.)

Calocampa brillians, Ottolengui, Journ. N.Y. Ent. Soc. x. p. 78, pl. x. f. 3 (1902); Dyar, Cat. Lep. N. Am. p. 172.

♂. Palpi and frons blackish mixed with some grey and brown; antennæ blackish; vertex of head and tegulæ bright rufous, the latter with a deep red line before tips which are grey-brown; thorax deep red-brown becoming fuscous and grey in front and on dorsum, the patagia grey-white at shoulders; pectus red-brown and blackish; abdomen deep red-brown dorsally, blackish ventrally. Fore wing bluish grey suffused and irrorated with fuscous, with a pale diffused ochreous-yellow fascia from middle of reniform to near termen and a rufous tinge below costa from above reniform to subterminal line, the base of inner margin rufous; an indistinct double waved subbasal line from costa to submedian fold; antemedial line double, the inner line interrupted and diffused, the outer very strongly excurved in the interspaces and angled inwards on the veins, strongly angled outwards above inner margin; orbicular and reniform with some fuscous in centres and grey annuli defined by black, the former oblique, constricted at middle, the latter very large, its outer edge broken by the yellow fascia with a fiery red spot on it; medial line slight, minutely waved, oblique from costa to lower angle of cell, then inwardly oblique; postmedial line indistinct, strongly bent outwards below costa, then dentate and produced to

black points on the veins, oblique; subterminal line represented by a band of somewhat dentate fuscous marks and a strong dentate black mark above vein 4, angled outwards at vein 7, then oblique: a terminal series of slight black striæ. Hind wing deep reddish brown, the cilia with pale line at base; the underside pale suffused with rufous and irrorated with fuscous, a black discoidal spot and diffused oblique postmedial line.

Hab. U.S.A., Maine, New Hampshire (*Webster*), co-type † in Coll. J. B. Smith. *Exp.* 48 millim.

2448. Xylina cineritia. (Plate CIII. fig. 13.)

Calocampa cineritia, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 210; id. Illustr. Essay, p. 58, pl. 2. f. 23; Smith, Cat. Noct. N. Am. p. 236.
Calocampa thoracica, Putnam-Cramer, Ent. Am. ii. p. 142 (1886).

Head and tegulæ ochreous tinged with rufous; palpi, frons, and tips of tegulæ fuscous black, tegulæ with two or three rufous lines on basal part and a black medial line; thorax fuscous black, the patagia whitish at base on outer side; pectus and legs with some grey mixed; abdomen ochreous suffused with rufous, the ventral surface fuscous except at extremity. Fore wing brownish grey, the medial costal area suffused with rufous; antemedial line double, triple in cell, very strongly angled outwards in the interspaces and inwards on the veins, in cell almost to base; orbicular elliptical defined by black and its centre fuscous; reniform a very strongly curved lunule with ochreous lunule at centre defined by fuscous and grey annulus defined by black on inner side, an ochreous streak beyond it in disc al fold to near termen; postmedial line represented by a double series of black points connected by traces of a dentate line, bent outwards below costa, then oblique; subterminal line diffused, whitish defined by brown suffusion on inner side and with dentate black mark before it above vein 4, angled outwards at vein 7, then oblique; the extremity of veins streaked with black; a fine black terminal line; cilia dark grey tipped with black. Hind wing reddish brown wholly suffused with fuscous; the underside ochreous tinged with rufous and irrorated with fuscous, a blackish discoidal lunule, somewhat dentate, oblique postmedial line, and some striæ on termen.

Ab. 1. *thoracica*. Thorax brownish grey.

Hab. Canada, Calgary (*Wolley-Dod*), 2 ♂, British Columbia (*Rickards*), 1 ♂; U.S.A., New Hampshire, Massachusetts, Newton (*Thaxter*), 1 ♂, New York, 1 ♂, 1 ♀ type, Oregon, Portland, Dalles, 1 ♂, Colorado, Denver (*Oslar*), 2 ♂, 2 ♀. *Exp.* 50–54 millim.

2449. Xylina brucei. (Plate CIII. fig. 14.)

Calocampa brucei, Smith, Ent. News Philad. iii. p. 252, pl. x. (1892); id. Cat. Noct. N. Am. p. 236.

♀. Head and thorax grey mixed with fuscous, vertex of head

and tegulæ to the dark medial line whitish tinged with rufous; abdomen grey-brown mixed with dark brown. Fore wing grey suffused and irrorated with fuscous, especially on costa and the inner medial area; a slight black streak below base of cell; antemedial line hardly traceable, strongly angled outwards in the interspaces and inwards on the veins; orbicular and reniform grey, their centres and circumference defined by black, the former elliptical, the latter much constricted at middle, some fuscous suffusion between them; postmedial line represented by traces of a double series of black points on the veins, bent outwards below costa, then oblique; subterminal line hardly traceable, grey, angled outwards at vein 7 and dentate to termen at veins 4, 3, with an elongate wedge-shaped black mark before it above vein 4 and slight dark streaks beyond it in the interspaces; cilia grey intersected with whitish and with two dark lines through them. Hind wing uniformly suffused with fuscous brown with a reddish tinge; cilia whitish; the underside whitish tinged with flesh-colour and irrorated with brown, a slight discoidal lunule, very ill-defined oblique postmedial line, and some striæ on termen.

Hab. U.S.A., Colorado, Glenwood Springs, 1 ♀. *Exp.* 58 millim.

2450. Xylina exoleta.

Noctua exoleta, Linn. Syst. Nat. x. p. 515 (1758); Esp. Schmett. iv. pl. 138. ff. 1–3; Hübn. Eur. Schmett., Noct. f. 244; Dup. Lép. Fr. vii. p. 163, pl. cxi. f. 2; Steph. Ill. Brit. Ent., Haust. ii. p. 173; Curt. Brit. Ent. pl. 256; Staud. Cat. Lep. pal. p. 211.
Calocampa impudica, Staud. Stett. ent. Zeit. 1888, p. 35.

Head and thorax grey, almost entirely suffused with fuscous black; the vertex of head and tegulæ ochreous tinged with rufous, the latter with brown medial line and rufous tips; patagia with some black scales near upper edge; pectus ochreous and fuscous; legs rufous and fuscous. Fore wing pale brownish ochreous suffused with grey and with fuscous on inner half and medial costal area; antemedial line indistinct, double, very highly angled outwards in the interspaces and inwards on the veins, in cell almost to base; orbicular and reniform with their centres and circumferences defined by blackish and with some black marks in centres, both irregularly elliptical and constricted at middle, the latter with some fuscous suffusion beyond it before the postmedial line, which is very indistinct, highly dentate and produced to a double series of black points on the veins, bent outwards below costa, then oblique, some white points beyond it on costa; subterminal line ochreous defined by brownish on inner side and with elongate wedge-shaped black mark before it above vein 4, angled outwards at vein 7 and dentate to termen at veins 4, 3; a terminal series of slight black marks; cilia grey with two black lines through them. Hind wing ochreous suffused with reddish fuscous except at base and inner margin; cilia ochreous white; the underside ochreous, the veins irrorated with fuscous, a slight black streak in base of cell, discoidal spot, and oblique postmedial series of short dark streaks on the veins.

Ab. 1. *impudica*. Paler, the fore wing greyer and less distinctly marked.—W. & E. Turkestan.

Hab. Britain, Leech Coll.: France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; ? Algeria; Canaries; Russia, Livonia, Zeller Coll.: Armenia; Asia Minor, Pontus, Lydia; W. Turkestan, Ferghana, Sarawschan, Tarbagatai Mts., Issyk Kul, Ala Tau; E. Turkestan, Ili; Tibet, Amdo. *Exp.* 55–66 millim.

Larva. Meyr. Brit. Lep. p. 50; Barrett, Lep. Brit. vi. p. 54, pl. 237. f. 1. Green; lateral line yellow, surmounted on each segment by a pair of connected white black-circled dots; spiracular line red, sometimes interrupted, white-edged beneath, marked with triplets of white black-circled dots. Food-plants: *Carduus*, *Selene*, *Ononis*, &c. 5–7.

2451. Xylina fumosa.

Calocampa fumosa, Butl. A. M. N. H. (5) i. p. 196 (1878); id. Ill. Het. B. M. ii. p. 33, pl. xxxi. f. 8.

♀. Head and thorax rufous strongly suffused with fuscous, the vertex of head and basal half of tegulæ ochreous suffused with rufous, the tegulæ with two slight rufous lines near base and dark medial line, patagia whitish on outer side at base; abdomen pale rufous suffused with fuscous towards extremity and on ventral surface except at extremity. Fore wing greyish ochreous tinged with rufous, the medial costal area and basal half of inner area suffused with fuscous brown; antemedial line double, treble in cell, very strongly angled outwards in the interspaces and inwards on the veins, in cell almost to base, an oblique striga before it above inner margin: orbicular and reniform narrow, constricted at middle and extending to well below cell, with some fuscous in centres and their centres and circumference defined by black, the latter with some fuscous suffusion beyond it; postmedial line indistinct, highly dentate and produced to a double series of points on the veins, bent outwards below costa, then oblique, some white points beyond it on costa: subterminal line pale, angled outwards at vein 7 and dentate to termen at veins 4, 3, with wedge-shaped black marks before it above veins 4, 3, and slight fuscous suffusion beyond it and slight black streaks on extremities of veins; cilia dark brown with a blackish line through them. Hind wing reddish brown uniformly suffused with fuscous; cilia pale; the underside whitish tinged with rufous and irrorated with fuscous, especially on the veins, a small discoidal spot and indistinct postmedial line, with slight dark streaks on the veins.

Hab. Japan, Yokohama (*Jonas*, *Pryer*), 7 ♀ type. *Exp.* 64–72 millim.

2452. Xylina formosa.

Calocampa formosa, Butl. A. M. N. H. (5) i. p. 196 (1878); id. Ill. Het. B. M. ii. p. 33, pl. xxxi. f. 9.

Head and basal half of tegulæ ochreous tinged with rufous; palpi

and lateral bars on frons blackish; tegulæ with dark medial line, their tips and the thorax deep rufous; abdomen fuscous brown, the lateral tufts pale. Fore wing greyish suffused with brown and with rufous on costal area; a double waved subbasal line from costa to submedian fold; a double moderately dentate antemedial line, angled outwards above inner margin; claviform with its extremity defined by a black striga; orbicular narrow and extending to well below cell, with fuscous centre and grey annulus defined by black; reniform elliptical, fuscous defined by black; a somewhat waved diffused medial line passing between the stigmata; postmedial line indistinct, dentate and produced to a double series of points on the veins, bent outwards below costa, then oblique, some pale points beyond it on costa; subterminal line ochreous defined by rufous on inner side, angled outwards at vein 7 and slightly excurved at middle, the area beyond it pale, especially at apex; a terminal punctiform line; cilia rufous with waved black line through them. Hind wing fuscous brown, the cilia pale; the underside ochreous grey irrorated with fuscous and suffused with fuscous towards termen, which is pale, a small discoidal spot, slightly curved postmedial line, and terminal series of small lunules.

Hab. Japan, Tokio (*Maries*), 2 ♂, Yokohama (*Jonas*, *Pryer*), 5 ♂, 4 ♀ type. *Exp.* 54–58 millim.

Genus **BEHRENSIA**.

Type.

Behrensia, Grote, Can. Ent. vii. p. 70 (1875) ..... *conchiformis*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front; frons smooth with large tuft of hair; eyes large, rounded; antennæ of male simple, laminate, with large tufts of hair from basal joint; head and thorax clothed chiefly with rough scales, the tegulæ produced to a dorsal ridge, the pro- and metathorax with small spreading crests, pectus and legs clothed with long scales and hair; abdomen with dorsal series of crests, the one on 2nd joint very large and fan-shaped, lateral fringes of hair. Fore wing short and broad, the termen obliquely curved, the tornus with small scale-tuft; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2453. Behrensia conchiformis.

Behrensia conchiformis, Grote, Can. Ent. vii. p. 71 (1875); id. List Noctuidæ, pl. f. 6; Smith, Cat. Noct. N. Am. p. 246.

Head and thorax black-brown mixed with grey and black; tegulæ red-brown, black at base and greyish at tips; tarsi black ringed with white; abdomen dark brown mixed with grey, the dorsal crests reddish brown. Fore wing grey-white suffused with brown and irrorated with black, and with patches of golden green scales on basal area, beyond postmedial line, before terminal lunules, and sometimes on medial costal area; the medial area black-brown; subbasal line represented by black striæ from costa and cell; ante-

medial line black, oblique from costa to median nervure, strongly incurved in submedian interspace and angled outwards above inner margin; claviform moderate, defined by black; orbicular white incompletely defined by black and with reddish-brown centre, round, with some white suffusion beyond and below its lower extremity; reniform dark brown defined by black and with whitish annulus on inner side and above; an indistinct waved medial line; postmedial line double, strong, black, bent outwards below costa, incurved at

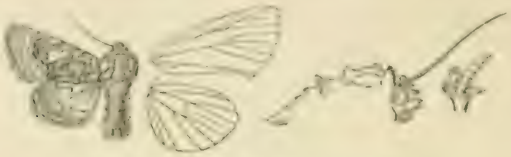


Fig. 83.—*Behrensia conchiformis*, ♂. ½.

discal fold, below vein 4 incurved to below reniform and waved, the outer line only distinct towards costa; terminal area greyer with traces of dentate whitish subterminal line: a terminal series of small black lunules; cilia dark brown. Hind wing with the basal half reddish brown with some white in and beyond end of cell and on inner area; an obscure discoidal lunule and postmedial line excurved at middle, the area beyond it fuscous; cilia fuscous at base, white at tips; the underside with the basal area rather whiter suffused with reddish brown.

Hab. U.S.A., Washington Territory, 1 ♀, Oregon, Portland, California, Sanzalito, 1 ♂, 1 ♀ type. *Exp.* 32 millim.

Genus **XYLOTYPE**, nov.

Type, *X. capax*.

Proboscis fully developed; palpi upturned, moderate, fringed with long hair in front; frons smooth, rounded; eyes large; antennæ of male ciliated; head and thorax clothed chiefly with scales, the thorax quadrately scaled, the tegulæ produced to a slight dorsal ridge; the pro- and metathorax with spreading crest; pectus clothed with long hair; abdomen with dorsal series of crests, the one on 3rd segment large. Fore wing broad, triangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2454. Xylotype capax.

Xylina capax, Grote, Trans. Am. Ent. Soc. i. p. 355, pl. 7. f. 37 (1868); Smith, Cat. Noct. N. Am. p. 230.

Head and thorax purplish grey mixed with black-brown; frons with black bar; tegulæ with black medial line; patagia with some black scales near edges; tarsi ringed with white; abdomen brown irrorated with grey. Fore wing purplish grey suffused with brown and rufous; subbasal line indistinctly double filled in with grey,

waved, from costa to vein 1; antemedial line defined by grey on inner side, oblique from costa to submedian fold, angled inwards on vein 1 and bent inwards to inner margin; a black streak in submedian fold between the ante- and postmedial lines with the ill-defined claviform above it; orbicular and reniform large, with

Fig. 84.—*Xylotype capax*, ♂. ½.

grey centres and whitish annuli incompletely defined by black, the former oblique elliptical, the latter constricted at middle and angled inwards on median nervure, prominently defined by black below; postmedial line defined by grey on outer side, double at costa, bent outwards below costa, then dentate, oblique below vein 4 and angled inwards in submedian fold almost to the antemedial line; subterminal line whitish defined by black on outer side, bent outwards between veins 7, 6, dentate at 4, 3, and strongly angled inwards in submedian fold where there is some black suffusion beyond it; the veins of terminal area streaked with black; a terminal series of small black lunules. Hind wing fuscous brown, the cilia whitish at tips; the underside whitish thickly irrorated with brown, a discoidal spot and indistinct sinuous postmedial line.

Hab. Canada; U.S.A., Eastern and Middle States, New York, Centre (*W. W. Hill*), 2 ♂, 3 ♀ type; Colorado. *Exp.* 50–54 millim.

Genus **EUROTYPE**, nov.

Type, *E. acutissima*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with long hair in front; frons smooth, rounded; eyes large; head and thorax roughly clothed with hair and scales, the pro- and metathorax with slight spreading crests, the tegulæ produced to a slight dorsal ridge; pectus clothed with long hair; abdomen with dorsal series of crests. Fore wing broad, triangular; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with short branches, the apical part serrate.

A. Fore wing with the postmedial line extremely strongly dentate ..... *acutissima*.
B. Fore wing with the postmedial line moderately dentate.
a. Fore wing with the ground-colour grey suffused with brown *medialis*.
b. Fore wing with the ground-colour whitish slightly tinged with brown ..... *confragosa*.

2455. Eurotype acutissima.

Pachypolia acutissima, Grote, Check List Noct. p. 23, pl. f. 9 (1875); Smith, Cat. Noct. N. Am. p. 167.

♂. Head and thorax clothed with white, brown, and black scales and hair; tarsi ringed with white; abdomen ochreous mixed with brown. Fore wing whitish thickly suffused and irrorated with dark brown; a black streak below base of cell defined by white above; subbasal line defined by whitish on outer side, waved, from costa to submedian fold; antemedial line defined by white on inner side, oblique, dentate, angled inwards on vein 1 and outwards above inner margin; claviform large, defined by black; orbicular

Fig. 85.—*Eurotype acutissima*, ♂. ½.

and reniform large, with brown centres and white annuli defined by black, the former oblique V-shaped, open above; postmedial line double, filled in with white, bent outwards below costa, then strongly dentate, angled inwards in submedian fold; subterminal line white defined on inner side by small dentate black marks, angled outwards at vein 7 and dentate at veins 4, 3, incurved at submedian fold; a terminal series of small black lunules; cilia brown intersected with white. Hind wing fuscous brown, the basal area rather paler; the underside yellowish white thickly irrorated with brown, a discoidal spot, waved postmedial line, and traces of subterminal line.

Hab. Canada, Montreal, 1 ♂ type, Ottawa (*Young*), 1 ♂, Nova Scotia. *Exp.* 50 millim.

2456. Eurotype medialis. (Plate CIII. fig. 15.)

Polia medialis, Grote, Ann. Lyc. Nat. Hist. N. York, xi. p. 306 (1876); Smith, Cat. Noct. N. Am. p. 167.

Head and thorax clothed with white, brown, and black scales mixed; frons with black bar; tegulæ with black medial line and blackish tips; tarsi black ringed with white; abdomen brown and white mixed, the dorsal crests black at tips. Fore wing whitish irrorated with brown, the medial area suffused with brown; a sinuous black streak below base of cell; a waved black subbasal line from costa to submedian fold on a white patch; antemedial line black defined by white on inner side, oblique, angled inwards on the veins and to inner margin; claviform large, defined by

black, acute at extremity, and connected with the postmedial line by a streak or angle of postmedial line; orbicular and reniform large, with white annuli defined by black, the former oblique elliptical, open above, the latter slightly angled inwards on median nervure and with black streaks from it to postmedial line; a rather indistinct medial line, oblique from costa to vein 2, then dentate; postmedial line black defined by white on outer side, bent outwards below costa, then dentate, oblique below vein 4, sometimes angled inwards in submedian fold to the claviform; subterminal line white, dentate, defined by small dentate black marks on inner side slightly angled outwards at vein 7 and excurved at middle, a terminal series of small black lunules; cilia brown intersected with white. Hind wing pale almost wholly suffused with fuscous brown; cilia whitish with a fuscous line through them; the underside whitish irrorated with brown, a black discoidal point, minutely dentate postmedial line incurved at discal fold and below vein 4, and diffused terminal band.

Hab. Canada, Quebec (*Lyman*), 1 ♂; U.S.A., New York, Schenectady (*Lintner*), 1 ♀ type. *Exp.* ♂ 46, ♀ 48 millim.

*2457. Eurotype confragosa. (Plate CIII. fig. 16.)

Polia confragosa, Morr. Proc. Bost. Soc. Nat. Hist. xvii. p. 138 (1874); Smith, Cat. Noct. N. Am. p. 166.

♂. Head and thorax brown and grey; frons with black bar; tegulæ with black medial line; patagia whitish edged with dark brown; tarsi ringed with white; abdomen pale rufous. Fore wing grey-white, slightly suffused with brown, the medial area rather darker; a sinuous black streak below base of cell; subbasal line represented by two black striæ from costa; antemedial line black defined by white on inner side, oblique, dentate inwards on the veins and angled inwards to inner margin; claviform slightly defined by black; orbicular and reniform large, grey, incompletely defined by black, the former oblique, the latter irregular, an indistinct medial line oblique from costa to cell, then dentate; postmedial line defined by white on outer side, bent outwards below costa, then dentate, incurved below vein 4, blacker and acutely angled inwards in submedian fold, some white points beyond it on costa; subterminal line whitish defined on inner side by slight dentate dark marks, angled outwards at vein 7 and inwards at discal and submedian folds, where there is slight dark suffusion beyond it; a terminal series of small black lunules; cilia whitish with a dark line through them. Hind wing grey suffused with reddish brown and with indistinct diffused medial and subterminal bands; some dark lunules on termen; cilia whitish with a dark line through them; the underside whitish irrorated with brown, a small discoidal spot, waved postmedial line, and diffused subterminal band.

Hab. Canada, Quebec; U.S.A., Wisconsin in U.S. Nat. Mus. *Exp.* 46 millim.

Sect. II. Antennæ of male minutely serrate and fasciculate.

*2458. Eurotype contadina.

Polia contadina, Smith, Trans. Am. Ent. Soc. xxi. p. 71, pl. 3. f. 1 (1894); Dyar, Cat. Lep. N. Am. p. 120.

♂. Head and thorax white mixed with fuscous; palpi with black patch on 2nd joint: frons with black bar; antennæ black ringed with white; some black on vertex of head; tegulæ with black medial line and tips; patagia with black outer edge and line near upper edge; vertex of thorax black; tarsi ringed with white; abdomen fuscous mixed with grey, the dorsal crests blackish. Fore wing grey-white largely suffused with fuscous, the medial area darker; a sinuous black streak below base of cell and another above inner margin near base; subbasal line double, waved, from costa to submedian fold; antemedial line defined by white on inner side, oblique, slightly waved, angled inwards on vein 1 and bent

Fig. 86.—*Eurotype contadina*, ♂. ½.

inwards to inner margin: claviform defined by black; orbicular and reniform whitish defined by black and with some fuscous in centre, the former small, rounded; an irregularly waved medial line; postmedial line double filled in with white, bent outwards below costa, then dentate, oblique below vein 4 and acutely angled inwards in submedian fold; subterminal line white defined on inner side by dentate black marks and with a blackish patch before it at costa, angled outwards at vein 7 and inwards at discal and submedian folds, where there are patches of blackish suffusion beyond it; a terminal series of small black lunules; cilia chequered fuscous and white. Hind wing greyish suffused with fuscous brown and with diffused subterminal band; cilia whitish with a dark line through them; the underside grey-white irrorated with brown, a small black discoidal lunule and diffused subterminal line.

Hab. Canada, Br. Columbia in U.S. Nat. Mus. *Exp.* 44 millim.

Genus DICHONIA.

	Type.
Dichonia, Hübn. Verz. p. 217 (1827)	*areola*.
Xylocampa, Guen. Ann. Soc. Ent. Fr. 1837, p. 227	*areola*.

Proboscis fully developed; palpi with the 2nd joint oblique, clothed with long hair, the 3rd porrect; frons smooth, rounded, with large frontal tuft; eyes large, round; antennæ of male typically nearly simple; head and thorax

clothed chiefly with scales, the tegulæ dorsally produced to a ridge; the head, pro- and metathorax with spreading crests; pectus and tibiæ clothed with long hair; abdomen with dorsal series of crests and lateral fringes of hair. Fore wing rather narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male ciliated.

A. Fore wing with the terminal area blackish ..... *lubrica.*
B. Fore wing with the terminal area concolorous ..... *obliquisigna.*

2459. Dichonia lubrica.

Hadena lubrica, Butl. Ill. Het. B. M. vii. p. 60, pl. 128. f. 9 (1889); Hmpsn. Moths Ind. ii. p. 228.

♂. Head and thorax dark brown mixed with grey; palpi blackish at sides except at extremity of 2nd and 3rd joints; tegulæ with black medial line; patagia with black line near upper edge; tarsi blackish with pale rings; abdomen brownish grey irrorated with fuscous. Fore wing purplish grey suffused with brownish fuscous and irrorated with black, the postmedial area paler, the terminal area darker; a sinuous black streak below base of cell; subbasal line double filled in with whitish, angled inwards in cell and ending at the black streak; antemedial line double, waved, oblique; claviform large, defined by black, rather acute at extremity, with black streak from it to postmedial line and bidentate white patch beyond

Fig. 87.—*Dichonia lubrica*, ♂. ½.

it; orbicular and reniform large, greyish, defined by black, the former oblique elliptical; postmedial line bent outwards below costa, then minutely dentate, incurved below vein 4, some grey points beyond it on costa; subterminal line grey, faintly defined by dark scales on inner side, somewhat dentate, angled outwards at vein 7, excurved at middle and angled inwards in discal and submedian folds, with black streaks beyond it in the interspaces; a waved terminal line; cilia with white line at base. Hind wing pale, almost entirely suffused and irrorated with purplish brown; a dark terminal line; cilia white with a brown line through them; the underside whitish irrorated with brown, a dark discoidal spot and curved postmedial line.

Hab. Punjab, Dharmsála (*Hocking*), 1 ♂ type. *Exp.* 46 millim.

2460. Dichonia obliquisigna. (Plate CIII. fig. 17.)

Polia obliquisigna, Hmpsn. J. Bomb. Soc. xiv. p. 202 (1902).

Head and thorax grey mixed with white and fuscous, frons with black bar; tegulæ with black medial line defined by whitish behind; patagia whitish edged with black; tarsi ringed with black; abdomen grey irrorated with fuscous. Fore wing grey sparsely irrorated with black and slightly tinged with olive ochreous in parts, especially on medial area; a slight black streak below base of cell; subbasal line indistinctly double filled in with white, curved, from costa to submedian fold; antemedial line indistinctly double, obliquely curved and minutely waved; claviform defined by black, acute at extremity with a bidentate white patch beyond it and black streak from it to postmedial line; orbicular and reniform large, defined by black except above, the former white, oblique elliptical, the latter with slight pale annulus; an irregular medial line bent outwards round the white patch below cell; postmedial line very indistinct, double at costa, bent outwards below costa, then dentate and produced to black and white points on the veins, incurved below vein 4; subterminal line grey slightly defined by black on inner side below costa, then on outer side and on both sides in submedian interspace, angled outwards at vein 7, slightly dentate at veins 4, 3 and angled inwards in submedian interspace, some black streaks beyond it in the interspaces; a terminal series of small black lunules; cilia grey with black lines through them. Hind wing whitish nearly uniformly suffused with grey-brown; a dark terminal line; cilia white with a brown line through them; the underside white irrorated with fuscous, a discoidal spot and indistinct curved postmedial line.

Hab. Punjab. Simla (*Pilcher*). 1 ♀ type. Dharmsála (*Hocking*), 1 ♂. *Exp.* 40 millim.

Larva. Green with some irregular whitish markings; a slight pale dorsal line; head brownish; prothoracic shield brown. Food-plant, Oak. 5.

Sect II. Antennæ of male nearly simple.

2461. Dichonia areola.

Noctua areola, Esp. Schmett. iv. pl. 141. f. 4 (1789); Staud. Cat. Lep. pal. p. 212.

Noctua lithorhiza, Bork. Eur. Schmett. iv. p. 339 (1792); Treit. Eur. Schmett. v. 3. p. 66; Dup. Lép. Fr. vii. p. 191, pl. 112. f. 4; Frr. Beitr. pl. 70. f. 2; id. Neue Beitr. v. pl. 460; Steph. Ill. Brit. Ent., Haust. ii. p. 187; Mill. Icones. pl. 104. f. 1.

Noctua operosa, Hübn. Eur. Schmett., Noct. f. 398 (1827); Geyer, Eur. Schmett., Noct. ii. 764–5.

Head and thorax clothed with brownish-grey and fuscous scales and hair; palpi streaked with black at sides; frons with black bar; vertex of head with the crest black; tegulæ with strong black line at base and slight medial line; abdomen grey mixed with brown, the lateral fringes tinged with purplish pink. Fore wing brownish grey slightly irrorated with black, the disk tinged with fuscous;

the veins slightly streaked with black; a black streak below base of cell defined by whitish above; antemedial line defined by whitish on inner side, strongly angled outwards below costa and above and below vein 1; orbicular and reniform brownish grey defined by black, their centres tinged with fuscous, the former elongate elliptical, conjoined to an elliptical mark below the cell, often connected with the reniform, which is more or less angled inwards on median nervure; postmedial line bent outward below costa, then minutely dentate, oblique below vein 4; subterminal line only defined by

Fig. 88.—*Dichonia areola*, ♂. ½.

slight black streaks before it above vein 6 and in submedian interspace, and by the area beyond it being brown with black streaks in the interspaces, dentate to termen at veins 7, 6, 4, 3. Hind wing whitish suffused with brown, the inner area paler, the veins and a fine terminal line darker; the underside white, the costal and terminal areas irrorated with brown, a black discoidal spot and sinuous postmedial line with short streaks on the veins.

Ab. 1. Much greyer.—Hyères, Andalusia.

Hab. Britain (*Barrett*), Leech Coll.; France, Sand and Leech Colls., Hyères (*Yerbury*); Denmark; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Spain, Andalusia, Leech Coll., Catalonia; Portugal; North & Centr. Italy; Sicily; ? Russia; Asia Minor, Bithynia, ? Pontus; Syria. *Exp.* 32–42 millim.

Larva. Meyr. Brit. Lep. p. 52; Barrett, Lep. Brit. vi. p. 43, pl. 236. f. 2.

Pale greyish ochreous; dorsal line paler, double; darker brown dorsal blotches on somites 7, 8; 11 with small prominence. Food-plant, *Lonicera*. 6–8.

Genus **PLEROMA**.

Type.

Pleroma, Smith, Trans. Am. Ent. Soc. xviii. p. 113 (1891)..... *obliquata*.

Proboscis fully developed; palpi upturned, fringed with very long hair in front; frons rounded; eyes overhung by long cilia; antennæ of male minutely ciliated; head and thorax clothed with hair and hair-like scales, tufts of long hair above base of antennæ, the tegulæ forming a dorsal ridge; pro- and metathorax without crests; tibiæ and 1st joint of fore tarsi fringed with long hair; abdomen with dorsal crests on basal segments and lateral fringes of hair. Fore wing with the apex somewhat produced and the termen obliquely curved; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

A. Fore wing black, the costal area broadly suffused with white ..... *conserta*.
B. Fore wing with the ground-colour grey.
a. Fore wing with white streak defined above and below by black in submedian fold from postmedial to subterminal line.
*a*¹. Hind wing uniformly suffused with brown ..... *bonuscula*.
*b*¹. Hind wing white, the veins and terminal area suffused with brown ..... *cinerea*.
b. Fore wing without white streak in submedian fold between postmedial and subterminal lines ..... *obliquata*.

2462. Pleroma conserta. (Plate CIII. fig. 18.)

Valeria conserta, Grote, Papilio, i. p. 58 (1881); Smith, Cat. Noct. N. Am. p. 235.
Pleroma apposita, Smith, Ent. News Philad. iii. p. 252 (1892); id. Trans. Am. Ent. Soc. xxi. p. 81, pl. 1, row 2, f. 1 (1894); Dyar, Cat. Lep. N. Am. p. 169.

♀. Head and thorax black with some white hair, vertex of head white; tegulæ white at base, with subbasal black line and whitish tips; tarsi ringed with white; abdomen black mixed with ochreous grey. Fore wing black; the costal area broadly and irregularly white to near apex, interrupted by the diffused antemedial and medial lines and the finer oblique postmedial line, which are otherwise obsolete; the basal area white, its outer edge angled inwards in submedian fold; a white discoidal lunule conjoined to the costal area; a subterminal series of diffused white lunules except towards costa and inner margin; cilia chequered white and fuscous. Hind wing greyish uniformly suffused with fuscous brown; cilia white with diffused brown line through them; the underside white irrorated with fuscous especially towards termen, a slight discoidal lunule and curved postmedial series of slight streaks on the veins.

Hab. Canada, Br. Columbia, Victoria, Vancouver (*W. H. Danby*), 1 ♀; U.S.A., Washington, 1 ♀ type. *Exp.* 36 millim.

2463. Pleroma bonuscula. (Plate CIII. fig. 19.)

Pleroma bonuscula, Smith, Can. Ent. xxx. p. 325 (1898); Dyar, Cat. Lep. N. Am. p. 169.

♂. Head and thorax clothed with grey and black hair; tegulæ with the basal half white with black line, the tips blackish; tarsi ringed with white; abdomen blackish with some grey hair. Fore wing grey strongly irrorated and suffused with black; the costal area slightly suffused with white; the veins and submedian fold streaked with black; antemedial line oblique and diffused from costa to median nervure, then finer, angled inwards on median nervure, then oblique to inner margin; reniform represented by a slight lunule with oblique shade from costa to its upper edge; postmedial line indistinct, obliquely curved from costa to submedian fold, where it becomes confluent with the antemedial line; subterminal line represented by a series of white points on slight

wedge-shaped black marks, in submedian fold forming a white streak to postmedial line with blackish streaks above and below it. Hind wing uniform fuscous brown; the underside grey thickly irrorated with brown, and with slight discoidal lunule and traces of sinuous postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes*), 2 ♂. *Exp.* 34 millim.

2464. Pleroma cinerea. (Plate CIII. fig. 20.)

Pleroma obliquata, Smith, Trans. Am. Ent. Soc. xviii. p. 114 (1891), part.
Pleroma cinerea, Smith, Psyche, xi. p. 56 (1904).

♂. Head and thorax bluish white mixed with some brown; palpi fuscous at sides; frons with fuscous bar; vertex of head with fuscous spot; tegulæ with black line near base and brown tips; abdomen whitish irrorated with fuscous. Fore wing bluish white irrorated with brown, the veins with fine black streaks; antemedial line acutely angled outwards on median nervure and inwards in submedian fold, then almost obsolete; claviform and orbicular obsolete; reniform minute and very indistinctly defined by brown, with an oblique brown striga from middle of costa to its upper edge; postmedial line bent outwards below costa and angled at vein 6, then inwardly oblique, almost straight to above vein 1, then obsolete; an oblique brown shade from apex to vein 3, with series of slight black streaks on it, those above and below vein 5 extending to inner side of postmedial line; a series of very slight black streaks from below vein 6 close to termen to above vein 2, where the streak is longer and oblique; a black streak defined below by white, below which is a slight black streak, in submedian fold extending to inner side of postmedial line. Hind wing white tinged with brown, especially on the veins and terminal area; cilia white with a brown line at base; the underside white irrorated with brown, a small discoidal spot and postmedial series of slight streaks on the veins.

Hab. U.S.A., Oregon, 1 ♂, California, Sierra Nevada. *Exp.* 38 millim.

2465. Pleroma obliquata.

Pleroma obliquata, Smith, Trans. Am. Ent. Soc. xviii. p. 114 (1891); id. Cat. Noct. N. Am. p. 235.

Head and thorax bluish white mixed with black; frons with

Fig. 89.—*Pleroma obliquata*, ♂. ½.

black bar; tegulæ with black line near base, medial band and blackish tips; tarsi with white rings; abdomen black-brown mixed

with grey. Fore wing blue-grey thickly irrorated with black; the veins streaked with black; a slight black streak in submedian fold to the antemedial line, which is oblique and strong from costa to median nervure, then incurved; traces of a discoidal lunule with dark mark on costa above it; postmedial line angled outwards on vein 6 and inwards in submedian fold, then oblique, sinuous; an oblique shade from apex to vein 2; a series of slight black streaks in interspaces of terminal area. Hind wing pale suffused and irrorated with brown; cilia white with brown line at base; the underside white irrorated with brown, a discoidal lunule and postmedial series of slight streaks on the veins.

Hab. U.S.A., Colorado, Glenwood Springs (*Barnes, Oslar*), 7 ♂, 2 ♀, California. *Exp.* 38 millim.

Genus **NEUMICHTIS**, nov.

Type, *N. trijuncta*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with long hair in front, the 3rd short, somewhat porrect; frons smooth; eyes large, rounded; antennæ of male minutely serrate and fasciculate; head and thorax clothed with hair and hair-like scales and without distinct crests, the tegulæ produced to a dorsal ridge; pectus clothed with long hair; tibiæ fringed with long hair on outer side; abdomen with dorsal series of crests and lateral fringes of hair. Fore wing triangular, the termen rather erect; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2466. **Neumichtis trijuncta.**

Hadena trijuncta, Wlk. xi. 597 (1857).

Head, thorax, and abdomen grey mixed with fuscous; tegulæ more or less tinged with pale rufous at base and with dark medial line; abdomen with the dorsal crests blackish. Fore wing grey irrorated and suffused with fuscous, the medial area slightly darker;

Fig. 90.—*Neumichtis trijuncta*, ♂. ½.

subbasal line black, waved, from costa to submedian fold; a slight subbasal black streak above inner margin usually present; antemedial line indistinctly double, the outer line prominent, obliquely curved, slightly angled inwards on subcostal nervure and vein 1; claviform small, defined by black; orbicular and reniform with brown centres and grey annuli defined by black, the former rather

oblique elliptical and touching, or confluent with a similar stigma below the cell; traces of a waved medial line; postmedial line defined by whitish on outer side, bent outwards below costa, excurved to vein 4 and produced to slight streaks on the veins, then incurved to lower edge of reniform and angled outwards on veins 2 and 1, a diffused blackish fascia from it to termen above and below vein 2; subterminal line indistinct, whitish defined on inner side by small dentate black marks, angled outwards at vein 7 and dentate to termen at veins 4, 3; cilia fuscous intersected with white. Hind wing fuscous, the basal half rather paler; cilia white with some fuscous at middle and apex; the underside white slightly irrorated with brown, the terminal area broadly black; a black discoidal lunule.

Hab. N. S. Wales (*Raynor*), 2 ♀; Victoria, Gisborne (*Lyell*), 1 ♂, 1 ♀; Tasmania, 1 ♀ type. *Exp.* 34–40 millim.

Genus **NYCTYCIA**, nov.

Type, *N. persimilis.*

Proboscis fully developed; palpi porrect to just beyond frontal tuft and fringed with long hair below; frons smooth; eyes rather small and somewhat reniform; antennæ of male minutely serrate, with fascicles of long cilia; head and thorax smoothly clothed chiefly with scales, the pro- and metathorax with spreading crests; pectus and legs clothed with rather long hair; abdomen with dorsal crests on basal segments. Fore wing rather long and narrow, the termen obliquely curved and somewhat crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 shortly stalked; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

Sect. I. Palpi with the 3rd joint long and dilated at extremity.

2467. **Nyctycia plagiogramma**, n. sp.

♂. Head and thorax reddish brown mixed with fuscous; palpi blackish at sides; frons with black bar; antennæ blackish; tegulæ with black medial shade; tarsi black with pale rings; abdomen

Fig. 91.—*Nyctycia plagiogramma*, ♂. ½.

ochreous brown suffused with fuscous except anal tuft and base of ventral surface. Fore wing ochreous brown irrorated with fuscous; a sinuous black streak below base of cell; subbasal line represented by a black point on costa; antemedial line double at costa, then single, oblique to submedian fold, then obsolete; claviform fuscous defined by black and confluent with lower edge of orbicular, which

has a slight greyish annulus defined by black, somewhat oblique elliptical; reniform slightly defined by black; an irregularly sinuous medial line; postmedial line bent outwards below costa, then somewhat dentate and produced to short streaks on the veins, excurved to vein 4, oblique to submedian fold, then bent outwards, some pale points beyond it on costa; subterminal line greyish slightly defined on each side by black, minutely waved, slightly excurved at vein 7 and middle, with black streaks in the interspaces beyond it; a fine waved terminal line; cilia with fine pale line at base. Hind wing yellowish brown tinged with fuscous, the termen rather darker; cilia brownish ochreous with a dark line through them; the underside whitish irrorated with brown, a black discoidal lunule and indistinct sinuous postmedial line.

Hab. Punjab, Simla (*Pilcher*), 1 ♂ type. *Exp.* 28 millim.

Sect. II. Palpi with the 3rd joint short.

2468. Nyctycia persimilis.

Bombycia persimilis, Hmpsn. Moths Ind. ii. p. 206 (1894).
Raphia viminalis, Butl. Ill. Het. B. M. vii. p. 11 (nec Fabr.).

♂. Head and thorax reddish brown mixed with some fuscous; sides of palpi and frons blackish; antennæ blackish with pale rings; tegulæ with black line near tips, which are fuscous; abdomen grey-brown suffused with fuscous. Fore wing grey-brown sparsely irrorated with black and suffused with fuscous on medial area; a sinuous black streak below base of cell; subbasal line represented by two black striæ from costa; antemedial line oblique from costa to submedian fold; claviform rather large, defined by black; orbicular pale brown, defined by black, rounded; reniform

Fig. 92.—*Nyctycia persimilis*, ♂. ½.

pale, defined on inner side only by a straight oblique black line; postmedial line represented by double black striæ from costa, then very indistinct, bent outwards below costa and excurved to vein 4, then strongly incurved to below inner edge of reniform and prominent; subterminal line very indistinct, greyish defined on inner side by minute dentate black marks at middle and in submedian fold, excurved at vein 7 and incurved below vein 3; a terminal series of slight black lunules; cilia with a dark line through them. Hind wing fuscous brown, the cilia greyish with a fuscous line near base; the underside grey sparsely irrorated with

brown, a black discoidal lunule and traces of a sinuous postmedial line.

♀ darker; fore wing more suffused with fuscous on basal and terminal areas, the subterminal line better defined.

Hab. Punjab, Dharmsála (*Hocking*), 1 ♂, 3 ♀, type. *Exp.* 34 millim.

Genus **THECOPHORA.**

Type.
Thecophora, Led. Noct. Eur. p. 99 (1837) ..... *fovea.*

Proboscis fully developed; palpi upturned, fringed with long hair in front, the 3rd joint porrect; frons smooth, rounded, with large frontal tuft; eyes rather small and reniform; antennæ of male minutely ciliated; head and thorax clothed chiefly with long scales, the pro- and metathorax with spreading crests; pectus with long hair; tibiæ fringed with hair; hind tibiæ in male very short, the 1st joint of tarsus very long, the spines on it playing on the dilated extremity of subcostal nervure forming the keel of the very large boat-shaped fovea on disk of hind wing; abdomen with dorsal series of crests, the male with tufts of long hair protrusible from lateral stigmata. Fore wing triangular, the termen obliquely curved and rather crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2469. Thecophora fovea.

Phlogophora fovea, Treit. Eur. Schmett., Noct. v. pt. i. p. 380 (1825); Dup. Lép. Fr. vii. p. 49, pl. 103. ff. 4–5; Geyer, Eur. Schmett., Noct. ff. 753–6; Frr. Beitr. pl. 46; Meig. Syst. Besch. iii. p. 119, pl. 101. f. 10; Friv. Tudom. Akad. Erkön. xi. pt. 4, pl. 5. ff. 7, *a–c*; Staud. Cat. Lep. pal. p. 182.

Head and thorax rufous mixed with some black; tarsi fuscous with ochreous rings; abdomen greyish and fuscous tinged with purplish pink. Fore wing brown suffused with purple and fuscous; a slight black streak below base of cell; subbasal line double, waved, from costa to submedian fold; antemedial line strong, double, angled outwards below costa, then oblique, waved, angled inwards on vein 1 and to inner margin, above which there is an oblique

Fig. 93.—*Thecophora fovea*, ♂. ½.

black bar on its inner side; claviform large, filled in with black; orbicular and reniform defined by black, the former oblique elliptical, with traces of ochreous annulus, the latter slightly angled inwards on median nervure, with its outer part ochreous, its centre slightly defined by brown; traces of a waved medial line; postmedial line double, filled in with ochreous at costa and traversing a diffused

ochreous patch between reniform and inner margin, bent outwards below costa, then dentate, excurved to vein 4, then incurved; subterminal line formed by ochreous points defined by small dentate dark marks on inner side, angled outwards at vein 7 and excurved at middle. Hind wing ochreous nearly uniformly suffused with brown; the fovea pale; the cilia pinkish; the underside grey irrorated with brown, traces of a diffused medial line, a discoidal point, a postmedial line excurved from below costa to vein 2, interrupted in male by the fovea.

Hab. Hungary, Zeller, Frey, and Leech Colls., Carniola; Dalmatia. *Exp.* 34–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 223.

Yellowish, with yellowish-red heart-shaped dorsal spots divided by paler lateral oblique stripes. Food-plant, Oak. 7–8.

The Moth produces a slight sound during flight.

Genus **DRYOBOTA**.

Type.

Dryobota, Led. Noct. Eur. p. 100 (1857) ..... *furva*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front and behind, the 3rd short, porrect; frons smooth; eyes rather small and reniform; antennæ of male minutely serrate and fasciculate; thorax clothed with hair and hair-like scales; pectus clothed with long hair; abdomen with dorsal crests on basal segments and lateral fringes of hair. Fore wing rather short and broad, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle or shortly stalked; 8 anastomosing with the cell near base only.

2470. **Dryobota furva.**

Noctua furva, Esp. Schmett. iv. p. 530, pl. 158. ff. 1-2 (1789); Staud. Cat. Lep. pal. p. 182.

Noctua occlusa, Hübn. Eur. Schmett., Noct. f. 732 (1827); Herr.-Schäff. Eur. Schmett., Noct. f. 62; Mill. Icones, i. p. 152, pl. 7. ff. 4–7.

Noctua didymoides, Dup. Lép. Fr. vii. p. 106, pl. 107. f. 3 (1827).

Head and tegulæ red-brown mixed with ochreous, the latter with dark lines at middle and near tips; thorax deep purple-brown; tarsi black with pale rings; abdomen grey-brown tinged

Fig. 94.—*Dryobota furva*, ♂. ½.

with purple-red. Fore wing purplish red slightly suffused with fuscous; a black streak below base of cell; subbasal line double, waved, from costa to submedian fold; antemedial line double,

oblique, waved, angled inwards on vein 1; claviform defined by black, acute at extremity; orbicular and reniform defined by black, the former round, the latter with white or yellowish patch on its outer edge; a medial line oblique from costa to below cell, where it is angled; postmedial line indistinctly double, bent outwards below costa, then dentate, incurved below vein 4, some pale points on costa beyond it; subterminal line pale, defined on inner side by slight dentate black marks and on outer by points, slightly angled outwards at vein 7 and dentate at veins 4, 3; cilia with a fine pale line at base. Hind wing ochreous suffused with fuscous brown, a diffused pale line before termen; the underside grey irrorated with fuscous, the costal area tinged with red, a small discoidal spot and curved postmedial line with minute dark streaks at the veins.

Hab. France, Frey, Sand, and Leech Colls.; Germany, Zeller Coll.; Austria; Hungary, Zeller and Leech Colls.; Switzerland; Algeria; Asia Minor, Taurus. *Exp.* 28–34 millim.

Larva. Kirby, Butt. & Moths Eur. p. 222; Hffm. Raup. p. 94, pl. 26. f. 19.

Green, the dorsal surface pale; yellow dorsal and subdorsal lines and a lateral series of dark V-shaped marks; head yellow. Food-plant, *Quercus ilex*, especially the flowers. Forming a cocoon of earth and silk.

Genus **DASEUPLEXIA**, nov.

Type, *D. lageniferæ*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with long hair in front, the 3rd porrect; frons smooth, with tuft of scales on it and another between antennæ; eyes large, rounded; thorax clothed almost entirely with scales and quadrately scaled, the prothorax with divided crest; metathorax with spreading crests; abdomen with dorsal series of crests on basal segments and with lateral fringes of hair on terminal segments. Fore wing with the apex somewhat produced, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen sinuous; veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

Sect. I. Antennæ of male bipectinate with long branches, the apex simple.

*2471. Daseuplexia lageniformis.

Euplexia lageniformis, Hmpsn. Moths Ind. ii. p. 223 (1894).

♂. Head, thorax, and abdomen pale rufous; sides of palpi and frons blackish; tegulæ with diffused blackish line near tips; patagia deeper rufous at tips and with some dark brown scales near tips; tarsi dark brown with pale rings. Fore wing pale rufous, the veins slightly streaked with brown, the medial area suffused with deep red-brown except towards costa and inner margin; subbasal line double filled in with whitish, angled on median nervure and ending at vein 1; antemedial line double filled in with whitish, oblique,

angled outwards below costa and above inner margin; claviform indistinctly defined by blackish; orbicular and reniform pale rufous defined by blackish, the former oblique elliptical, open above and confluent below with an elongate elliptical mark in and below cell confluent with lower extremity of the reniform which is narrow, its inner edge incurved in upper part of cell and its lower extremity suffused with dark brown; medial line represented by a dark bar from costa and a line from vein 1 to inner margin; postmedial line double filled in with whitish, the outer line indistinct except at costa,

Fig. 95.—*Daseuplexia lageniformis*, ♂. ½.

slightly bent outwards below costa and strongly incurved below vein 4, some pale points beyond it on costa; subterminal line indistinct, pale, slightly defined on each side by brown, with two dentate black marks before it below costa, more clearly defined on each side by brown at middle; a terminal series of slight black lunules; cilia with fine pale line at base. Hind wing fuscous brown with slight discoidal lunule and curved postmedial line; a fine waved terminal line; cilia rufous with a brown line through them; the underside pale rufous slightly irrorated with brown, a blackish discoidal lunule and sinuous postmedial line.

Hab. Sikhim (*Atkinson*), type † ♂ in Coll. Elwes. *Exp.* 38 millim.

Sect. II. Antennæ of male minutely serrate and fasciculate.

2472. Daseuplexia lagenifera.

Luperina lagenifera, Moore, Lep. Atk. p. 114 (1882); Hmpsn. Moths Ind. ii. p. 216.

♂. Head bright rufous; thorax grey; tegulæ rufous at base and beyond the black medial line; patagia with black-brown outer edge;

Fig. 96.—*Daseuplexia lagenifera*, ♂. ½.

prothoracic crest rufous; tarsi dark brown with pale rings; abdomen bright rufous. Fore wing greyish tinged with rufous, the medial

area suffused with bright rufous ; subbasal line double filled in with grey, waved, from costa to submedian fold ; antemedial line double filled in with grey, oblique, sinuous, bent inwards to inner margin; orbicular creamy white tinged with rufous, rounded, connected with costa by a pale mark and by pale suffusion with lower part of reniform which is narrow above, with rufous centre and creamy annulus, a V-shaped blackish mark between them ; an indistinct waved medial line ; postmedial line double filled in with grey, bent outwards below costa, excurved to vein 4, then incurved, bent outwards to inner margin, some pale points beyond it on costa and slight dark striæ on median nervules ; subterminal line slightly defined by rufous on outer side and with prominent black spot before it below costa, somewhat angled outwards at vein 7 and dentate at veins 4, 3; a fine waved terminal line ; cilia brown with pale rufous line at base. Hind wing red-brown suffused with fuscous ; a fine waved terminal line ; cilia rufous ; the underside rufous slightly irrorated with brown, a blackish discoidal spot and curved waved postmedial line.

Hab. Sikhim (*Atkinson*, *Möller*), 4 ♂ type. *Exp.* 36 millim.

Genus MEGANEPHRIA.

	Type.
Meganephria, Hübn. Verz. p. 206 (1827)	*oxyacanthæ*.
Belosticta, Butl. A. M. N. H. (5) iv. p. 357 (1879)	*extensa*.
Miselia, Hübn. Tent. ined. (nec Treit.)	*oxyacanthæ*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front, the 3rd typically short : frons smooth ; eyes large, rounded ; antennæ of male typically bipectinate with rather short branches to apex, of female serrate ; head and thorax smoothly clothed chiefly with scales, the thorax quadrately scaled, the vertex of head, pro- and metathorax with spreading crests ; pectus and legs fringed with long hair ; abdomen with dorsal crests on basal segments and lateral fringes of hair towards extremity. Fore wing rather broad, the apex rounded, the termen crenulate ; veins 3 and 5 from near angle of cell ; 6 from upper angle ; 9 from 10 anastomosing with 8 to form the areole ; 11 from cell. Hind wing with veins 3, 4 from angle of cell ; 5 obsolescent from middle of discocellulars ; 6, 7 from upper angle ; 8 anastomosing with cell near base only.

Sect. I. Antennæ of female bipectinate with moderate branches, the apex serrate ; palpi with the 3rd joint long.

*2473. Meganephria tancrei.

Miselia tancrei, Græs. Berl. ent. Zeit. 1888, p. 329 ; Staud. Cat. Lep. pal. p. 181.

♀. Head and thorax dark brown mixed with ochreous white ; tegulæ with slight black medial line ; patagia whitish with black upper edge ; tarsi fuscous with pale rings ; abdomen fuscous brown slightly mixed with whitish, the ventral surface ochreous white irrorated with brown. Fore wing greyish suffused and irrorated with fuscous brown, the basal area to submedian fold and the cell brownish ochreous ; subbasal line double, waved, from costa to submedian fold, in which there is a black streak with dark brown

suffusion below it to antemedial line, which is double filled in with whitish, oblique, acutely angled outwards below costa and in submedian interspace, then excurved; claviform very large, defined by black except above; orbicular and reniform very large, with brownish centres and ochreous annuli defined by black, the former round, the latter with its upper part extremely dilated and produced outwards and with black streak through its lower part from medial to postmedial lines; an oblique diffused medial line from costa to median nervure, then indistinct, waved; postmedial line double filled in with greyish and with whitish lunule on it in submedian interspace, very strongly bent outwards below costa, then minutely dentate, oblique below vein 4, some pale points beyond it on costa, some blackish suffusion before it in submedian interspace and a black streak below vein 2 from just before it to termen; the terminal area rather greyer with black streaks on the veins and

Fig. 97.—*Meganephria tancrei*, ♀. ½.

black streak above vein 3 from before subterminal line to termen; subterminal line whitish defined by brown on inner side and with dentate brown mark before it below costa, angled outwards below costa, excurved at middle, then somewhat dentate; a terminal series of black lunules; cilia red-brown intersected with white and with whitish line at base. Hind wing fuscous brown, with indistinct sinuous postmedial line with white point on it at vein 2; some slight subterminal white points on the veins, the one on vein 2 more prominent; a fine waved black terminal line; cilia ochreous white mixed with brown; the underside grey-white irrorated with brown, a diffused slightly waved postmedial line with brown streak from it to termen below vein 2 and slight terminal line.

Hab. E. Siberia, Amurland, Sidemi, type † ♀ in Coll. Püngeler. *Exp.* 54 millim.

Sect. II. (*Meganephria*). Antennæ of male bipectinate to apex with short branches, of female serrate.

2474. Meganephria oxyacanthæ.

Noctua oxyacanthæ, Linn. Syst. Nat. x. p. 516 (1758); Esp. Schmett. iv. pl. 160. ff. 1–7; Hübn. Eur. Schmett., Noct. f. 31; Dup. Lép. Fr. vi. p. 274, pl. 96. f. 1; Steph. Ill. Brit. Ent., Haust. iii. p. 24; Staud. Cat. Lep. pal. p. 181.

Miselia capucina, Mill. Icones, iii. p. 165, pl. 116. f. 6 (1869).
Miselia benedictina, Staud. Iris, iv. p. 283 (1891).
Miselia asiatica, Staud. Iris, iv. p. 283 (1891).

Head and thorax deep red-brown mixed with grey; palpi blackish at sides; frons with dark bar above; patagia greyer edged with black; abdomen pale reddish brown, the dorsal crests blackish. Fore wing pale reddish brown suffused in parts with deeper red-brown, especially in outer part of medial area; the veins with slight dark streaks, the subcostal and median nervures, vein 1, and inner margin irrorated with some silvery green scales; a strong black streak below base of cell extending across the indistinctly double antemedial line, which is angled outwards below costa, inwards in submedian fold, excurved between these points and above inner margin; claviform very large, slightly defined by black, acute at extremity, extending to cell and with some black

Fig. 98.—*Meganephria oxyacanthæ*, ♂. ½.

suffusion from it to postmedial line; orbicular and reniform large defined by black and with some brown in centres, the former somewhat quadrate, the latter with its upper extremity produced to a large rounded lobe; medial line represented by a dark bar from costa and incurved line from vein 1 to inner margin; postmedial line indistinctly double, strongly bent outwards below costa, indistinct and sinuous below vein 4, excurved at submedian fold, then oblique and with prominent white lunule on it; postmedial area paler rufous except towards costa on which are some pale points; subterminal line pale, waved, interrupted, defined on inner side by slight black streaks below costa, then by small somewhat dentate brown marks, oblique at costa, slightly angled outwards at vein 7 and inwards in submedian fold; terminal area slightly suffused with silvery green; a fine waved black terminal line with wedge-shaped black streaks below veins 4, 3, 2; cilia pale and dark red-brown. Hind wing pale red-brown suffused with fuscous brown; two slight dark and pale curved marks on vein 2 towards termen; a fine dark terminal line; cilia pale at base; the underside whitish suffused and irrorated with red-brown, a slight discoidal lunule and sinuous postmedial line.

Ab. 1. *capucina*. Fore wing darker brown, with the markings less distinct.—Britain.

Ab. 2. *benedictina*. Fore wing dark greyish brown; hind wing whitish.—Syria.

Ab. 3. *asiatica*. Fore wing pale greyish brown; hind wing whitish.—Asia Minor, Palestine, Amurland.

Hab. Britain, England, Leech Coll., Ireland, Leech Coll.; France; Germany, Zeller and Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Spain; Italy; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus; Syria, Beirut, Leech Coll., Palestine; E. Siberia, Ussuri. *Exp.* 40–50 millim.

Larva. Meyr. Brit. Lep. p. 56; Barrett, Lep. Brit. iv. p. 325, pl. 172. f. 2.

Fuscous with darker markings and pale dots; dorsal and subdorsal lines indistinctly pale; 11th somite somewhat humped with four small tubercles; head brown. Food-plants: Hawthorn and Blackthorn. 4–6.

Sect. III. (*Belosticta*). Antennæ of male almost simple.

A. Fore wing with blackish fascia in submedian interspace from base to termen ..... *extensa*.
B. Fore wing without blackish fascia in submedian interspace.
  a. Fore wing with the ground-colour whitish.
    a^1. Fore wing with the reniform not angled inwards on median nervure ..... *bimaculosa*.
    b^1. Fore wing with the reniform angled inwards on median nervure ..... *[illegible]*.
  b. Fore wing with the ground-colour blackish ..... *[illegible]*.

2475. Meganephria extensa. (Plate CIII. fig. 21.)

Belosticta extensa, Butl. A. M. N. H. (5) iv. p. 357 (1879).
Miselia cinerea, Butl. Trans. Ent. Soc. 1881, p. 184.

♀. Head and thorax grey mixed with dark brown; palpi blackish at sides; frons with black bar; tegulæ with curved black line defined by whitish behind; patagia with black outer edge; abdomen grey irrorated with dark brown. Fore wing grey suffused with rufous and dark brown and irrorated with black; the veins with slight dark streaks, the subcostal and median nervures and inner area irrorated with silvery green; a strong blackish fascia below base of cell defined by pale yellowish above and extending to well beyond antemedial line; subbasal line fine, angled inwards in cell; antemedial line slightly angled outwards below costa, below submedian fold excurved, indistinct, double filled in with whitish; claviform confluent with the black basal fascia, defined by black and acute at extremity; orbicular and reniform large, with slight pale annuli incompletely defined by black, the former rounded, the latter angled inwards on median nervure and with some greenish scales on its lower part; traces of an irregular diffused medial line; postmedial line rather indistinct, double, strongly bent outwards below costa, then waved, oblique below vein 4, strong, incurved and with white lunule on it in submedian interspace, where there is a diffused black-brown fascia beyond it extending to termen; subterminal line indistinct, pale, waved and slightly defined by brown on inner side, with dentate black mark before it below costa and black streaks from it

to termen below veins 4, 3, 2; a fine waved black terminal line; cilia grey and dark brown. Hind wing fuscous brown; a slight pale mark on vein 2 near termen; a fine dark terminal line; cilia whitish at base; the underside whitish irrorated with brown, a small discoidal spot and curved postmedial line.

Ab. 1. *cinerea*. Darker; fore wing with the whole inner area suffused with dark brown.

Hab. Japan, Yokohama (*Pryer*), 8 ♀ type and type *cinerea*. *Exp.* 50–60 millim.

2476. Meganephria bimaculosa.

Noctua bimaculosa, Linn. Syst. Nat. xii. p. 856 (1766); Esp. Schmett. iv. pl. 157. f. 5; Hübn. Eur. Schmett., Noct. f. 32; Dup. Lép. Fr. vi. p. 378, pl. 96. f. 2; Curt. Brit. Ent. pl. 177; Steph. Ill. Brit. Ent., Haust. iii. p. 24; Staud. Cat. Lep. pal. p. 181.

Head and thorax grey-white irrorated with dark brown; palpi blackish at sides; frons with black bar; tegulæ with slight black medial line and black tips; patagia edged with black; tarsi with dark rings; abdomen grey tinged with red-brown. Fore wing grey-white tinged in parts with rufous and irrorated with dark brown; the veins with dark streaks; a slight dark streak below base of cell; subbasal line double, angled outwards below costa and ending at submedian fold; antemedial line indistinctly double, angled outwards below costa, then somewhat dentate, oblique, angled outwards above inner margin; claviform large, defined by brown; orbicular and reniform large, whitish defined by brown,

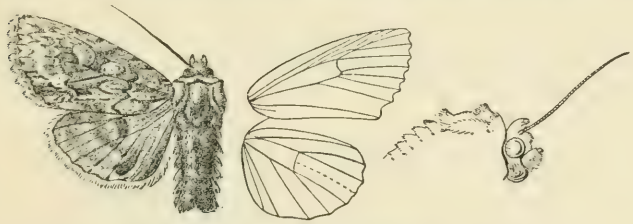


Fig. 99.—*Meganephria bimaculosa*, ♂. ½.

the former very oblique elliptical, the latter with its upper extremity produced; an indistinct medial line, oblique from costa to below cell, then inwardly oblique; postmedial line indistinctly double filled in with whitish, strongly bent outwards below costa, then minutely dentate, very oblique below vein 4, a rufous shade beyond it in submedian interspace and some white points on costa; subterminal line indistinct, brown, dentate, strongly angled inwards in submedian interspace and with black streak beyond it below vein 4; a terminal series of slight dentate brown marks. Hind wing whitish suffused and irrorated with reddish brown; the veins brown; a large brown discoidal lunule; traces of a sinuous postmedial line; a diffused brown spot on vein 2 near termen; a slightly waved brown terminal line; cilia whitish; the underside

white slightly irrorated with brown, the discoidal spot, waved post-medial line, and subterminal spot prominent.

Hab. Britain, Gloucester (once); France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Spain, Andalusia; North and Centr. Italy; Asia Minor; Pontus; Persia, Urumiah (*Daltry*), 2 ♀. *Exp.* 52–60 millim.

Larva. Meyr. Brit. Lep. p. 56; Hffm. Raup. p. 95, pl. 27. f. 2.

Brown, darker anteriorly; dots pale; spiracular line pale, dark-edged above; 11th somite with two tubercles. Food-plant, Elm. 5–6.

*2477. Meganephria sabulosa.

Miselia sabulosa, Grœs. Berl. ent. Zeit. 1892, p. 222; Staud. Cat. Lep. pal. p. 181.

♀. Head, thorax, and abdomen pale grey tinged with brown. Fore wing pale grey irrorated with dark scales forming irregular patches on middle of basal area, on medial area between the stigmata and on terminal area; a subbasal black mark in cell; antemedial line grey, evenly dentate, oblique; stigmata large, grey with dark centres and defined by blackish; the reniform angled inwards on median nervure and with white spot at lower extremity; post-medial line slightly bent outwards below costa, then dentate, excurved to vein 4, then oblique, some dark striæ and pale points beyond it on costa; subterminal line broad, whitish, defined on inner side by brown patches at costa and submedian fold where it is angled inwards; a terminal series of blackish lunules; cilia fuscous grey intersected with whitish. Hind wing grey with dark terminal line, the cilia yellowish; the underside yellowish irrorated with grey, a dark discoidal spot and terminal line.

Hab. E. Siberia, Amurland, Chabarofka. *Exp.* 37 millim. This species is unknown to me.

2478. Meganephria funesta. (Plate CIII. fig. 22.)

Miselia funesta, Leech, P. Z. S. 1889, p. 503, pl. 51. f. 7.

♀. Head and thorax black-brown mixed with reddish brown; tegulæ with slight pale curved line; abdomen deep fuscous brown. Fore wing with the ground-colour pale, almost entirely suffused with deep red-brown and very thickly irrorated with black; subbasal line represented by slight dark striæ from costa and cell; antemedial line indistinct, diffused, double, oblique from costa to vein 1, then bent inwards to inner margin; claviform large, very indistinctly defined by black; orbicular and reniform pale defined by fuscous and their centres defined by fuscous, the former round, the latter somewhat produced at upper angle; postmedial line indistinct, slightly defined by whitish on outer side, strongly bent outwards below costa, then waved, very oblique below vein 4, a short black streak beyond it below vein 2; subterminal line very indistinct, pale, waved, slightly angled outwards at vein 7 and strongly incurved in submedian interspace; a fine waved terminal

line; cilia pale with a blackish line through them. Hind wing whitish tinged with reddish brown; traces of a sinuous post-medial line; a slight brown mark on vein 2 towards termen and some slight dentate brown marks on medial part of termen; cilia brown with a pale line at base; the underside white, with medial brown mark on costa and indistinct sinuous postmedial line.

Hab. Japan, Yokohama (*Pryer*), 2 ♀ type. *Exp.* 58 millim.

Genus PACHYPOLIA.

Type.

Pachypolia, Grote, 6th Rep. Peab. Acad. Sci. p. 27 (1874) ..... *atricornis.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front, the 3rd short; frons smooth; eyes large, rounded; antennæ of male typically bipectinated with rather long branches, the apex simple; head and thorax clothed chiefly with scales, the thorax with divided dorsal ridge-like crest; pectus and legs clothed with long hair; abdomen with dorsal crest on basal segments. Fore wing rather narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of disco-cellulars; 6, 7 from upper angle or shortly stalked; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with rather long branches, the apex simple.

2479. Pachypolia atricornis.

Pachypolia atricornis, Grote, 6th Rep. Peab. Ac. Sci. p. 27 (1874); id. List Noctuidæ, pl. f. 8 (1875); Smith, Cat. Noct. N. Am. p. 164.

♂. Head and thorax clothed with grey, brown, and black scales; frons with black bar; tegulæ with black medial line and dark brown tips; patagia with black line near upper edge; tarsi with whitish rings; abdomen grey irrorated with black and tinged

Fig. 100.—*Pachypolia atricornis*, ♂. ½.

with reddish brown. Fore wing grey suffused with brown and irrorated with black, the medial area rather dark except basal part of inner area; a small tuft of white and black scales at base; a slight black streak below base of cell defined by white above; subbasal line represented by double curved black striæ from costa and cell; antemedial line double filled in with grey, waved, somewhat oblique and angled outwards above inner margin; claviform moderate,

defined by black and with diffused blackish fascia from it to postmedial line; orbicular and reniform whitish defined by black, the former small, elongate elliptical, and with dark centre, the latter large, rather quadrate, its outer edge indented and its centre slightly defined by fuscous; an indistinct medial line, oblique from costa to median nervure, then minutely dentate; postmedial line defined by whitish on outer side, indistinctly double towards costa, bent outwards below costa, then dentate, excurved to vein 4, then obliquely incurved, some whitish points beyond it on costa; subterminal line whitish, defined on inner side by small wedge-shaped black marks at middle, somewhat angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of minute black lunules; cilia whitish with series of black lunules at tips. Hind wing pale uniformly suffused with fuscous brown, the veins and a terminal line darker; cilia whitish at base, blackish at tips; the underside whitish irrorated with fuscous, a small discoidal spot, diffused curved postmedial line, and traces of subterminal band on inner half.

Hab. U.S.A., Illinois, 2 ♂ type. *Exp.* 46–50 millim.

Sect. II. Antennæ of male ciliated.

2480. **Pachypolia himalayensis**, n. sp.

♂. Head and tegulæ ochreous tinged with rufous; sides of palpi and frons blackish; antennæ blackish; tegulæ with black medial line; thorax deep rufous, the dorsal crest tipped with ochreous; pectus clothed with purplish-pink and brown hairs, the tarsi ringed black and pinkish ochreous; abdomen fuscous mixed with rufous and with slight greyish segmental lines, the anal tuft pale rufous. Fore wing ochreous almost wholly suffused with purplish red-brown, the terminal area with fuscous, the veins with slight dark

Fig. 101.—*Pachypolia himalayensis*, ♂. ½.

streaks; subbasal line represented by two slight striæ from costa; antemedial line double filled in with ochreous, angled outwards below costa, then excurved to vein 1 where it is slightly angled inwards; claviform large, defined by black; orbicular with brown centre and ochreous annulus defined by black, oblique elliptical; reniform with fuscous centre and ochreous annulus defined by black on inner side only, somewhat constricted at middle and with its lower extremity dentate: a slight medial line; postmedial line double filled in with ochreous, bent outwards below costa, then

minutely dentate, excurved to vein 4, then incurved to lower edge of reniform, some brown and ochreous striæ beyond it on costa, a black streak from it to termen above vein 4; subterminal line ochreous defined by rufous on inner side forming somewhat dentate marks at middle, very slightly angled outwards at vein 7 and dentate at veins 4, 3, with black streaks from it to termen above veins 3 and 2; a terminal series of black points; cilia fuscous brown, with fine pale line at base followed by a slight dark line. Hind wing greyish nearly uniformly suffused and irrorated with brown; a fine dark terminal line; cilia ochreous with a black line through them; the underside whitish irrorated with brown, strongly on costal area, a black discoidal lunule and sinuous postmedial line.

Hab. Sikhim, 1 ♂ type. *Exp.* 38 millim.

Genus **LAMPROSTICTA.**

	Type.
Lamprosticta, Hübn. Verz. p. 206 (1827)	*culta.*
Chariptera, Guen. Ann. Soc. Ent. Fr. vii. p. 124 (1838)	*culta.*

Proboscis fully developed; palpi upturned, short; frons smooth; eyes large, rounded; antennæ typically almost simple; head and thorax clothed chiefly with large rounded scales, the pro- and metathorax with spreading crests; pectus clothed with long hair; tibiæ thickly fringed with scales; abdomen with dorsal series of large crests. Fore wing rather short and broad, the apex rectangular, the termen rounded, non-crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the ground-colour white ..... *niphopasta.*
B. Fore wing with the ground-colour olive-green ..... *gemmea.*

*2481. **Lamprosticta niphopasta.** (Plate CIII. fig. 23.)

Lamprosticta niphopasta, Oberth. ined.

♂. Head white; palpi and lower part of frons dark brown; antennæ ringed with brown; vertex of head with some brown hairs; tegulæ white, with strong black line near base and black line near tips except at sides; patagia white edged with black and with some white at tips; thorax black with some white scales; pectus and legs white with a few brown hairs, the tarsi ringed with black; abdomen white mixed with brown. Fore wing white irrorated and in parts suffused with fuscous, especially on medial area and base of inner area; subbasal line black, from costa to submedian fold, with a semicircular black mark beyond it on costa; a black streak in submedian fold to the antemedial line, which is black, angled outwards below costa, then inwardly oblique to the submedian fold, then double, waved, filled in with white and with an oblique black mark before it on inner margin; claviform very

large, white defined by black except at base and with short black streak in centre; orbicular and reniform white defined by black and with black centres, the former round, the cell between them black; a waved black medial line; postmedial line double, black filled in with white, bent outwards below costa, then dentate, incurved at discal fold and below vein 4; subterminal line represented by a series of white lunules in the interspaces defined on inner side by dentate black marks and with black streaks from them to the terminal series of black lunules; cilia chequered white and black. Hind wing white, the veins slightly tinged with brown towards termen; a fuscous terminal line; cilia white; the underside with the costal area slightly irrorated with brown, a postmedial series of minute dark streaks on the veins.

Hab. Syria, Akbes, type † ♂, in Coll. Oberthür. *Exp.* 34 millim.

2482. Lamprosticta gemmea.

Miselia gemmea, Treit. Schmett. Eur. v. 1, p. 393 (1825); Dup. Lép. Fr., Suppl. iii. p. 269, pl. 24. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 70; Frr. Neue Beitr. pl. 411. ff. 1, 2; Staud. Cat. Lep. pal. p. 173.

Head white mixed with dark brown, the frons and vertex of head with dark bars; antennæ brown ringed with white at base; tegulæ yellowish white at base bounded by black and white lines and with brown tips; patagia and thorax brown, with black and white scales near upper edge of former; pectus with whitish hair except in front; tibiæ and tarsi ringed with white; abdomen brown. Fore wing olive-brown, the medial area beyond and below cell and above vein 1 and the terminal area tinged with purplish, the

Fig. 102.—*Lamprosticta gemmea*, ♂. ½.

veins irrorated with white; subbasal line double, black filled in with white, waved, from costa to vein 1; antemedial line double, black filled in with white, angled outwards below costa, excurved below cell and above inner margin and angled inwards on vein 1; claviform defined by black, with some white scales or entirely filled in with white; orbicular and reniform white defined by black, the former round with some black in centre, the latter with its centre defined by black; a dentate black medial line, oblique from costa to median nervure, then inwardly oblique; postmedial line double, black filled in with white, bent outwards below costa, then single and defined by white on outer side, slightly to vein 2, dentate, excurved to

vein 4, then incurved, some white points beyond it on costa; subterminal line formed of white lunules, defined on inner side by a series of dentate black marks and on outer by some black scales, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black spots connected by a fine waved line; cilia fuscous intersected with white, and with slight black line through them. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown leaving some whitish on termen towards tornus; a fine dark terminal line; cilia white; the underside with the costal area irrorated with brown, a brown discoidal lunule, curved postmedial line, and diffused subterminal band.

Hab. Denmark; Germany, Zeller and Leech Colls.; Austria; Switzerland, Frey Coll.; Corsica, Leech Coll. *Exp.* 38–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 240; Hffm. Raup. p. 97.

Bluish or greenish grey with black warts. Food-plant, *Alopecurus pratensis*. 6.

Sect. II. Antennæ of male almost simple.

A. Fore wing with the orbicular annulate and conjoined to a white annulus below cell ..... *culta*.
B. Fore wing with the orbicular quadrate, not conjoined to an annulus below cell ..... *munda*.

2483. Lamprosticta culta.

Noctua culta, Schiff. Wien. Verz. p. 70 (1776); Esp. Schmett. iv. pl. 120. f. 4; Hübn. Eur. Schmett., Noct. f. 34; Dup. Lép. Fr. vi. p. 361, pl. 95. f. 4; Frr. Neue Beitr. i. pl. 93.
Phalæna viridana, Walch, Naturf. xiii. p. 28, pl. 3. ff. 5. *a*, *b* (1779) Staud. Cat. Lep. pal. p. 181.
Mamestra adjuncta, Wlk. xi. p. 726 (1857).

Head and tegulæ white; palpi black, white at extremity of 2nd and 3rd joints; frons black at sides, with black lateral bars and black bar above; vertex of head with black bar; tegulæ with black lines near base and near tips which are black; patagia white edged with black and fringed with brown hair; thorax olive-brown, the crests on pro- and metathorax white and black; tibiæ white spotted with black, the tarsi black ringed with white; abdomen whitish suffused with brown and irrorated with fuscous on terminal segments, the crests tipped with black, in female darker. Fore wing olive-brown; the veins streaked with white and irrorated with black; a white patch at base of costa; the subbasal line represented by two black striæ from costa and one from cell, a point above vein 1 and some black above inner margin near base; antemedial line double, black filled in with white, angled outwards below costa, incurved in cell and excurved below vein 1; claviform a slight black mark; orbicular and reniform white defined by black and their centres defined by black, the former irregularly rounded and connected with a rounded or rather triangular white

mark with brown centre below the cell, the latter slightly angled inwards on median nervure and outwards at upper angle; a waved black medial line expanding into diffused patches in cell and below vein 2; postmedial line double filled in with white, strongly bent outwards below costa, then waved and produced to streaks on the veins, incurved below vein 4 and angled outwards on vein 1, some small white spots beyond it on costa; subterminal line represented by a black bar from costa, then slender, interrupted, angled outwards at vein 7 and inwards at vein 2; a terminal series of small

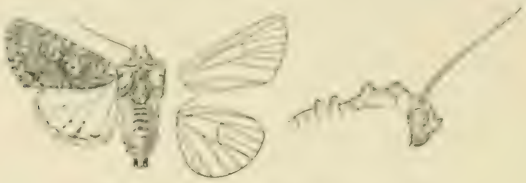


Fig. 103.—*Lamprosticta culta*, ♂. ½.

black lunules defined by white on inner side: cilia white intersected with black, the black enclosing white points at base. Hind wing pure semihyaline white, the terminal part of vein 2 with two black points with a short streak between them; a slight dark subterminal bar towards tornus; a fine black terminal line; female with waved curved postmedial line, the terminal part of veins streaked with brown, the terminal area suffused with brown; cilia intersected with black at base except towards tornus; the underside with the costal area slightly irrorated with fuscous, a curved postmedial series of minute streaks on the veins.

Hab. France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller Coll.; Hungary, Leech Coll.; Switzerland; N. Italy; Dalmatia, Leech Coll.; Rumelia; Bulgaria; Centr. Russia; Syria, Leech Coll.; ? hab., 1 ♂, type *adjuncta*. *Exp.* 40–48 millim.

Larva. Kirby, Butt. & Moths Eur. p. 221; Hffm. Raup. p. 95, pl. 27. f. 1. Brown or green, the thoracic somites with dorsal rather anchor-shaped marks outlined in brown: the subdorsal and lateral lines waved. Food-plants: Sloe, Hawthorn. 8–9.

2484. Lamprosticta munda. (Plate CIII. fig. 24.)

Eurois munda, Leech, Trans. Ent. Soc. 1900, p. 92.

♀. Palpi, frons, and antennæ black-brown, the last with the shaft ringed with white towards base; vertex of head white mixed with black; tegulæ white, blackish at tips; patagia and thorax black-brown, the latter with white and yellow scales near upper edges, pectus clothed with whitish and fuscous hair, the legs blackish, the tibiæ and tarsi ringed with white; abdomen black-

brown, whitish at base. Fore wing purplish grey irrorated with white and black; the basal area with white patches, tinged with olive-green at base of costa, in submedian interspace to antemedial line and on inner margin before antemedial line; subbasal line represented by double black striæ from costa on the white patch; antemedial line double, black filled in with white, angled outwards below costa, then oblique to submedian fold, then angled inwards on vein 1 and to inner margin; claviform defined by black except above, with some olive and white suffusion on it and olive and white patch beyond its extremity; an olive-tinged white patch on middle of inner margin; orbicular and reniform white tinged with olive and defined by black, both rather quadrate and with some olive and white between them in cell; the medial area with some whitish patches on costa; a waved black medial line, oblique from costa to below cell with slight whitish mark beyond it in submedian fold; postmedial line double filled in with grey, strongly bent outwards below costa, then dentate, incurved below vein 4, some white points beyond it on costa, and a series of whitish marks tinged with olive from beyond it to termen; the subterminal line represented by dentate black marks on these pale patches below costa and between veins 6 and 2; a terminal series of small black lunules; cilia purplish grey mixed with olive and with waved black line through them. Hind wing uniform fuscous brown; cilia with whitish line at base and white tips; the underside whitish very thickly irrorated with brown, a slight discoidal lunule, diffused sinuous postmedial line, and diffused subterminal band.

Hab. W. China, Ta-chien-lu, 1 ♀ type. *Exp.* 34 millim.

Genus **AGRIOPIS.**

	Type.
Agriopis, Boisd. Ind. Meth. p. 123 (1840)	*aprilina.*
Diphthera, Hübn. Tent. ined.	*aprilina.*

Proboscis fully developed; palpi oblique, fringed with hair in front; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair and scales mixed, the pro- and metathorax with spreading crests; fore femora greatly dilated; abdomen with dorsal crest on basal segments, and lateral fringes of hair. Fore wing with the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the ground-colour pale green ..... *aprilina.*
B. Fore wing with the ground-colour grey-brown.
  a. Fore wing with pale patch above the streak in base of submedian fold.
    a^1. Fore wing without dark streak in submedian fold from subterminal line to termen ..... *æruginea.*
    b^1. Fore wing with dark streak in submedian fold from subterminal line to termen ..... *convergens.*
  b. Fore wing without pale patch above the streak in base of submedian fold ..... *pryeri.*

2485. Agriopis aprilina.

Noctua aprilina, Linn. Syst. Nat. x. p. 514 (1758); Esp. Schmett. iv. pl. 148 *f.* 1–3; Steph. Ill. Brit. Ent., Haust. iii. p. 25; Staud. Cat. Lep. pal. p. 182.

Noctua rumica, Schiff. Wien. Verz. p. 70 (1776); Hübn. Eur. Schmett., Noct. f. 71; Dup. Lép. Fr. vi. p. 365, pl. 95. f. 5.

Head and thorax whitish suffused with pale blue-green or olive-green; sides of 1st and 2nd joints of palpi and frons black; antennæ black annulate with white; tegulæ with black spots at base of centre and sides and strong black terminal band; patagia with black outer edges; meso- and metathorax with paired black marks; pectus clothed with white and brown hair; legs white banded with black; abdomen whitish irrorated and suffused with black, the dorsal crests blackish. Fore wing white suffused with pale blue-green or olive-green, rarely largely suffused with black, especially on inner basal and median areas; a waved black subbasal line from costa to submedian fold, slight in cell and followed by a striga from costa and cell, a patch below cell and short fascia above inner margin; a waved black antemedial line defined by white on inner side, double at costa, interrupted below costa and angled inwards on vein 1; claviform defined by black except above

Fig. 104.—*Agriopis aprilina*, ♂. ½.

and with black streak from its lower extremity to postmedial line; orbicular and reniform large, white with slight greenish centres and defined by black, the former elliptical, usually open above and below, the latter usually open above, produced above and below and extending well below cell; a strong waved black medial line; postmedial line black defined by white on outer side, double at costa or throughout, bent outwards and usually interrupted below costa, then dentate and produced to black and white points on the veins, strongly incurved below vein 4, some white points beyond it on costa with black streaks between them; subterminal line white, defined on inner side by a black bar from costa, then by dentate black marks, dentate, angled outwards at vein 7, excurved at middle, then oblique; a terminal series of small triangular black marks; cilia white intersected with black. Hind wing whitish suffused with black; an indistinct postmedial line defined by whitish on outer side; a diffused irregular whitish subterminal band; a series of black terminal spots; cilia whitish intersected with black; the underside white slightly tinged with black, the costal area irrorated

with black, a large discoidal black spot, irregularly waved postmedial line, and terminal series of spots.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria, Carinthia, Zeller Coll.; Hungary; Switzerland; Spain, Castile; Sardinia; N. Italy; Scandinavia; Russia, Livonia, St. Petersburg, Caucasia; Asia Minor, Pontus. *Exp.* 42–52 millim.

Larva. Meyrick, Brit. Lep. p. 54; Barrett, Lep. Brit. iv. p. 320, pl. 172. f. 1.

Pale greenish ochreous freckled with black, forming a dorsal series of diamond-shaped marks; dorsal line pale, interrupted, black-edged; spiracular line pale, black-edged above. Food-plant, *Quercus*, resting by day on the trunks, the colour of which it resembles. 4–6.

2486. Agriopis æruginea.

Noctua æruginea, Hübn. Eur. Schmett., Noct. f. 374 (1827); Dup. Lép. Fr. vi. p. 301, pl. 91. f. 6; Frr. Neue Beitr. iii. pl. 237; Staud. Cat. Lep. pal. p. 182.

Noctua mioleuca, Hübn. Eur. Schmett., Noct. ff. 745–46 (1827).

Noctua chioleuca, Treit. Eur. Schmett. x. 2, p. 46 (1835); Frr. Neue Beitr. iii. pl. 279. ff. 2, 3.

Head and thorax grey mixed with fuscous; tegulæ white, with yellow patches at base and dark lines at middle and tips; tarsi fuscous ringed with brown; abdomen grey suffused with fuscous brown leaving pale segmental lines. Fore wing purplish grey; the costal area suffused with greenish white to the subterminal line; a sinuous black streak below base of cell with some yellow scales at its extremity; a subbasal patch of yellow scales on inner margin; subbasal line represented by two black striæ from costa; antemedial line double filled in with whitish, oblique, waved; claviform large and extending to the postmedial line, defined by black, and with slight white patch beyond it; orbicular and reniform greenish white, defined by black and with some blackish in centres, the former rounded or somewhat quadrate, open above, the latter large; traces of a waved medial line; postmedial line double, strongly bent outwards below costa, then dentate, incurved below vein 4 and angled inwards in submedian fold where it has a white lunule on it with yellow patch beyond it, some white points beyond it on costa; subterminal line whitish, with more or less yellow scales on it and slightly defined on each side by fuscous, angled outwards at vein 7, excurved at middle and angled inwards in discal and submedian folds; the veins of terminal area with fine black streaks; a fine black terminal line; cilia with fine white line at base and intersected with whitish. Hind wing white, the veins brown; a slight discoidal spot and interrupted subterminal line stronger towards tornus; a fine dark terminal line and brownish line through the cilia; in female the wing is wholly suffused with brown; the underside white, the costal area irrorated with brown, a small discoidal spot and slight sinuous postmedial line.

Ab. 1. *mioleuca*. Thorax and fore wing without the white and yellow markings.

Hab. France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary, Zeller and Leech Colls.; Italy; Sicily?; Dalmatia; Galicia; Bulgaria; Asia Minor, Pontus. *Exp.* 38–40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 221; Hffm. Raup. p. 94, pl. 26. f. 23.

Pale yellow with spade-shaped spots on dorsum intersected by a pale line; subdorsal and lateral yellowish-white stripes. Food-plant, *Quercus pubescens*. 5.

2487. Agriopis convergens.

Noctua convergens, Schiff. Wien. Verz. p. 84 (1776); Fabr. Mant. ii. p. 170 (1787); Hübn. Eur. Schmett., Noct. f. 84; Dup. Lép. Fr. vi. p. 298, pl. 91. f. 5; Staud. Cat. Lep. pal. p. 182,
Noctua spicula, Esp. Schmett. iv. pl. 166. f. 2 (1792).

Head and thorax grey mixed with dark brown and sometimes tinged with rufous; frons with black bar; tegulæ with brown medial line and brown tips; patagia with some black scales near upper edge; fore femora edged with black at extremity; tarsi with pale rings; abdomen brownish grey irrorated with fuscous. Fore wing whitish and purplish grey irrorated with fuscous; a sinuous black streak below base of cell; two slight striæ from costa; antemedial line double, oblique, slightly waved; claviform broad, defined by black, usually with a somewhat bidentate pale mark beyond it, a black streak from its lower extremity to postmedial line; orbicular and reniform with brown centres and grey annuli defined by black, the former somewhat oblique elliptical; an indistinct irregular medial line, oblique from costa to below cell; postmedial line double filled in with whitish, bent outwards below costa, then dentate, strongly incurved below vein 4, with a more prominent white lunule on it in submedian interspace and chestnut patch beyond it in the fold and some pale points on costa; subterminal line whitish slightly defined by brownish on inner side and by fuscous on outer, angled outwards at vein 7 and excurved at middle, in submedian fold angled inwards and with black patch beyond it; the veins of terminal area with slight dark streaks; a terminal series of small black lunules; cilia grey with a fuscous line through them. Hind wing grey suffused with fuscous brown; a dark terminal line; cilia grey with a fuscous line through them; the underside whitish irrorated with brown, a small discoidal annulus and sinuous postmedial line.

Hab. France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Frey Coll.; Hungary, Leech Coll.; Switzerland; N. Italy; Bulgaria. *Exp.* 40–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 222; Hffm. Raup. p. 94, pl. 26. f. 22.

Pale yellow above with dorsal and subdorsal whitish lines with brown spade-shaped spots between them; lateral area suffused with brown, the lateral stripe yellow. Food-plant, *Quercus*. 6.

2488. Agriopis pryeri. (Plate CIV. fig. 4.)

Eurois pryeri, Leech, Trans. Ent. Soc. 1900, p. 92.

Head and thorax grey and fuscous more or less mixed with olive-yellow; tarsi with pale rings; the fore femora with black spot at extremity; abdomen grey-brown. Fore wing greyish more or less completely tinged with olive-green and irrorated with fuscous; the veins streaked with fuscous grey; a slight black streak below base of cell; subbasal line represented by a slight striga from costa; antemedial line oblique, waved, angled inwards on vein 1; claviform defined by black except above, with bidentate grey patch beyond it and a black streak from its lower side to postmedial line; orbicular and reniform large, rounded, greyish defined by black; an indistinct waved medial line; postmedial line indistinctly double filled in with grey, bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line pale, defined on inner side by somewhat dentate olive-green marks, excurved below costa and at middle and angled inwards in discal and submedian folds, some slight black streaks beyond it; a terminal series of black lunules. Hind wing whitish tinged with brown especially on the veins and terminal area; a slight dark mark at extremity of vein 2; a dark terminal line; cilia brown with a fine pale line at base; the underside whitish, the costal area irrorated with brown, a small discoidal annulus.

Hab. Japan, Yokohama (*Pryer*), 5 ♂, 3 ♀, type. *Exp.* 38–40 millim.

Genus **EUMICHTIS.**

	Type.
Eumichtis, Hübn. Verz. p. 211 (1827)	*lichenea.*
Crino, Hübn. Verz. p. 216 (1827)	*sommeri.*
Epunda, Dup. Cat. Meth. p. 141 (1844)	*lichenea.*

Proboscis fully developed; palpi upturned, the 2nd joint fringed with hair, the third typically short; frons smooth; eyes large, rounded; head and thorax clothed almost entirely with scales, the pro- and metathorax with spreading crests; tibiæ fringed with long hair; abdomen with dorsal series of crests and lateral fringes of hair. Fore wing rather short and broad, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Eumichtis*). Antennæ of male bipectinate, with rather long branches to apex.

A. Fore wing with the subterminal line whitish ..... *lichenea.*
B. Fore wing with the subterminal line yellowish ..... *muscosa.*

2489. Eumichtis lichenea.

Noctua lichenea, Hübn. Eur. Schmett., Noct. ff. 762-3 (1827) Dup. Lép. Fr. vi. p. 420, pl. 99. f. 2; Oberth. Ét. Ent. xix. p. 35, p. 6. f. 42; Staud. Cat. Lep. pal. p. 179.

Noctua tephra, Geyer, Eur. Schmett., Noct. f. 707 (1827).
Polia viridicincta, Frr. Beitr. pl. 21. f. 2 (1831); Treit. Schmett., Suppl. v. 2. p. 55 (1835); Dup. Lép. Fr., Suppl. iii. pl. 24. f. 2; Herr.-Schäff. Eur. Schmett., Noct. f. 415.

♂. Head, thorax, and abdomen olive-brown mixed with grey; tarsi blackish ringed with white. Fore wing grey suffused with olive-brown and greenish; subbasal line double filled in with grey, waved, from costa to submedian fold; antemedial line double filled in with grey, waved, rather oblique; claviform small defined by black; orbicular and reniform whitish irrorated with brown and slightly defined by black, the former small, round, the latter rather irregular and constricted at middle; a curved waved medial line; postmedial line double filled in with grey, bent outwards below costa, excurved to vein 4, then incurved, some white points beyond it on costa; subterminal line formed of whitish lunules defined on inner side by small dentate black marks and on outer by slight black marks, angled outwards at vein 7 and slightly excurved at middle; a terminal series of small black lunules; cilia ochreous

Fig. 105.—*Eumichtis lichenea*, ♂. ½.

brown with waved dark line through them. Hind wing ochreous white, the veins tinged with brown; a slight discoidal point, sinuous postmedial line and traces of subterminal line; a brown terminal line; cilia tinged with brown; the underside whiter, the costal area slightly irrorated with brown, a small discoidal spot and curved postmedial line.

♀ darker; hind wing more or less completely suffused with brown.

Ab. 1 (*tephra*). Paler and greyer, without the olive shades.

Hab. Britain, Leech Coll., S. Wales (*Barrett*); France, Zeller, Frey, Sand, and Leech Colls.; Spain, Aragon, Castille, Andalusia; Sicily; Dalmatia; Algeria. *Exp.* 36–42 millim.

Larva. Meyr. Brit. Lep. p. 53; Barrett, Lep. Brit. iv. p. 287. pl. 167. f. 2.

Pale dull green or brownish with darker reticulations; spiracular line pale green; head yellowish or yellow-brown. Food-plants: *Scabiosa*, *Senecio*, *Rumex*, &c. 11–5.

2490. Eumichtis muscosa. (Plate CIV. fig. 5.)

Epunda muscosa, Staud. Iris, iv. p. 281 (1891); id. Cat. Lep. pal. p. 179.

♂. Head and thorax whitish tinged with rufous; abdomen ochreous white slightly irrorated with brown. Fore wing whitish suffused with rufous and in parts with dark brown especially on

medial area; subbasal line represented by slight pairs of black points below costa and cell; antemedial line waved, interrupted, slightly defined by whitish on inner side; claviform a small dark mark; orbicular and reniform small, defined by black, the former oblique elliptical, the latter rather quadrate; an indistinct waved medial line forming a diffused patch between the stigmata; postmedial line defined by whitish on outer side, bent outwards below costa, then dentate, excurved to vein 4, then incurved; subterminal line yellowish defined by slight dentate dark marks on inner side, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia pale rufous mixed with fuscous. Hind wing white tinged with ochreous; an indistinct diffused subterminal band; a slight dark terminal line; the underside with the costal area tinged with rufous, a slight discoidal spot and faint curved postmedial line.

♀. Rather darker; fore wing with more distinct white annuli to stigmata; hind wing with the postmedial line and subterminal band more prominent.

Hab. Armenia, 1 ♂; Asia Minor, Pontus, Taurus; Syria, 1 ♀. *Exp.* 34 millim.

Sect. II. Antennæ of male bipectinate with short branches, the apical part serrate.

A. Hind wing of male white ..... *trisignata.*
B. Hind wing of male fuscous brown ..... *albostigmata.*

*2491. Eumichtis trisignata.

Hadena trisignata, Mén. Mém. Ac. Imp. Sci. St. Pétersb. (6) viii. p. 286, pl. 6. f. 9 (1848); Staud. Cat. Lep. pal. p. 171.

♂. Head, thorax, and abdomen grey tinged with red-brown. Fore wing grey tinged with red-brown; a sinuous black streak below base of cell and another above inner margin before the antemedial line, which is dark, defined by grey on inner side, oblique towards costa, then sinuous; claviform slightly defined by black and with black streak from its extremity to postmedial line; orbicular oblique elliptical, defined by black and with some brown in centre; reniform with brown centre and white annulus defined by black; postmedial line defined by grey on outer side, bent outwards below costa, incurved at discal fold and oblique below vein 4; subterminal line white, angled outwards at vein 7 and dentate nearly to termen at veins 4, 3; a terminal series of black striæ. Hind wing glossy yellowish white; a slight dark discoidal lunule; the veins towards termen dark and with some dark suffusion on each side of them; a terminal series of black striæ; cilia yellowish; the underside yellowish white, the costal area irrorated with brown, a dark discoidal lunule.

Hab. Asia Minor, Pontus, Taurus; W. Turkestan, Turcomania, Ferghana. *Exp.* 46 millim.

This species is unknown to me; it may perhaps belong to the genus *Anytus* with *leuconota*. H. S.

*2492. Eumichtis albostigmata.

Epunda albostigmata, Beth.-Baker, Trans. Ent. Soc. 1891, p. 206; Staud. Cat. Lep. pal. p. 172.
Hadena atlantica, Beth.-Baker, Trans. Ent. Soc. 1891, p. 207; Staud. Cat. Lep. pal. p. 172.

♂. Head and thorax purplish red mixed with a few black scales; palpi blackish at sides; lower part of frons black at sides and with a black bar above; tegulæ with black medial line; patagia with some black scales near upper edge; abdomen ochreous tinged with rufous and irrorated with brown, the base whitish, the anal tuft rufous. Fore wing purplish red largely suffused and irrorated with black-brown, especially on medial and terminal areas; subbasal line represented by black striæ from costa and median nervure; a diffused sinuous black streak below base of cell; antemedial line double, the inner line indistinct, angled outwards below costa, then oblique and slightly angled inwards on vein 1; claviform defined by black, acute at extremity and with a black streak from it to postmedial line; orbicular and reniform white defined by black, the former oblique elliptical, open above and with slight brown line in centre, the latter large with brown centre; an indistinct medial line angled outwards below costa and on median

Fig. 106.—*Eumichtis albostigmata*, ♂. ½.

nervure, then waved; postmedial line double at costa, bent outwards below costa, then dentate, incurved below vein 4, some white points beyond it on costa; subterminal line formed of small whitish lunules, defined on inner side by small dentate dark marks and with short black streaks beyond it in the interspaces, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia fuscous with ochreous line at base and intersected with ochreous. Hind wing fuscous brown mixed with some whitish, the veins darker, a slight dark discoidal lunule; a dark postmedial line angled at vein 4 and fine dark terminal line; cilia ochreous with a fuscous line through them; the underside whitish irrorated with brown, a large black discoidal lunule and sinuous postmedial line.

Ab. 1. *atlantica*. Much brighter and more uniform purplish red; fore wing with the terminal area only suffused with black-brown, the orbicular round without any white, the reniform with a little white in centre and white line on outer edge; the medial line distinct; the subterminal line purplish red and more continuous.

Hab. Madeira, type † and type † *atlantica* in Coll. Bethune-Baker. *Exp.* 50 millim.

Sect. III. Antennæ of male strongly serrate and fasciculate.

A. Fore wing with the subterminal line strongly dentate at veins 4, 3 ..... *magnirena.*

B. Fore wing with the subterminal line slightly waved at veins 4, 3 ..... *tenerifica.*

*2493. Eumichtis magnirena.

Hadena magnirena, Alph. Rom. Mém. vi. p. 36 (1892); Staud. Cat. Lep. pal. p. 171.

♂. Head and thorax greyish tinged with rufous and mixed with dark brown; palpi with the 2nd joint blackish at sides; frons and vertex of head with blackish bars; tegulæ with blackish line near tips; patagia with blackish outer edge; tarsi black with pale rings; abdomen grey-brown. Fore wing grey-brown tinged with rufous and with slight dark irroration; subbasal line represented by double black striæ from costa and cell; a sinuous black streak in base of submedian fold and an oblique streak above inner margin before the antemedial line which is double, interrupted below costa, then oblique, slightly excurved in the interspaces and angled inwards on the veins; claviform rather large, defined by black and with black streak from it to postmedial line; orbicular

Fig. 107.—*Eumichtis magnirena*, ♂. ½.

and reniform large, the former rather obliquely rounded, defined by black, the latter defined by black on inner side and below and with large ochreous patch with brown centre on its outer edge which is somewhat dentate; a slight medial line, rather diffused and oblique from costa to vein 2, then dentate and approximated to the postmedial line, which is indistinctly double, bent outwards below costa, then dentate, oblique below vein 4, slightly incurved and stronger in submedian interspace, some pale points beyond it on costa; the postmedial area slightly paler; subterminal line ochreous defined on inner side by reddish brown, angled outwards at vein 7 and dentate to near termen at veins 4, 3, the area beyond it rather darker except at apex; a terminal series of small black lunules; cilia brown with fine ochreous line at base. Hind wing greyish suffused with brown, the veins and terminal area towards apex rather darker; a discoidal spot, curved postmedial line, and traces of diffused subterminal band; a dark terminal line; cilia ochreous with dark line through them; the underside greyish tinged and irrorated with brown, a black discoidal lunule, rather diffused postmedial line, and terminal series of lunules.

♀. Fore wing with the patch on reniform white.

Hab. Tibet, Kuku-nor in Coll. Püngeler; W. China. *Exp.* 50 millim.

2494. **Eumichtis tenerifica**, n. sp. (Plate CVIII. fig. 5.)

♂. Head and thorax red-brown mixed with greyish; sides of palpi and frons with some black; tegulæ with black medial line; tibiæ with some black; tarsi black with pale rings; abdomen brown dorsally suffused with fuscous, the ventral surface greyish irrorated with fuscous. Fore wing red-brown with slight dark irroration, the median nervure greyish; a slight black streak below base of cell; subbasal line represented by double dark striæ from costa and cell; antemedial line indistinctly double, waved; claviform slightly defined by blackish; orbicular and reniform defined by black, the former oblique elliptical, the latter with some white scales on outer and lower edges; an indistinct medial line, oblique from costa to median nervure, then dentate; postmedial line double at costa, bent outwards below costa, then minutely waved, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line indistinct, pale, angled outwards at vein 7, excurved and slightly waved at middle, the area beyond it rather darker except at apex; a terminal series of blackish points; a fine pale line at base of cilia. Hind wing fuscous brown; the cilia pale rufous with a brown line through them; the underside greyish irrorated with brown, a black discoidal lunule, curved minutely waved postmedial line, and terminal series of small lunules.

Hab. Canaries, Teneriffe (*W. White*), 1 ♂ type. *Exp.* 52 millim.

Sect. IV. (*Crino.*) Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the subterminal line angled outwards at veins 4, 3, and forming a ≷-mark.

a. Fore wing with the dentate black marks before subterminal line extending at middle to postmedial line ... *melanodonta*.

b. Fore wing with the dentate black marks before subterminal line small and not extending to postmedial line.

a^1. Hind wing wholly suffused with brown.

a^2. Fore wing with series of pale points at base of cilia ... *subpicta*.

b^2. Fore wing with fine pale line at base of cilia ..... *satura*.

b^1. Hind wing of male whitish: the veins and terminal area tinged with brown.

a^2. Fore wing with the postmedial line excurved from below costa to vein 4, then incurved.

a^3. Hind wing with the terminal area nearly evenly suffused with brown ..... *adusta*.

b^3. Hind wing of male with diffused dark patches on terminal area ..... *insueta*.

b^2. Fore wing with the postmedial line angled outwards at vein 5, then incurved ..... *sommeri*.

B. Fore wing with the subterminal line not angled outwards at veins 4, 3 ..... *sepulcralis*.

2495. Eumichtis melanodonta, n. sp. (Plate CIV. fig. 6.)

Hadena porphyrea, Leech, Trans. Ent. Soc. 1900, p. 58 (nec Esp.).

Head and thorax reddish brown mixed with black and a few grey scales; sides of palpi and frons blackish; tegulæ with black medial line; tarsi ringed with whitish; abdomen dark reddish brown, greyish at base. Fore wing pale pinkish mixed with whitish mostly suffused with purplish fuscous, the veins streaked with fuscous; a strong sinuous black streak below base of cell, with whitish suffusion above it and an oblique black streak above inner margin before the antemedial line; subbasal line represented by slight double oblique striæ from costa; antemedial line double filled in with greyish, oblique, angled inwards on the veins and outwards below costa and in cell, excurved below cell and above inner margin; claviform large, indistinctly defined by black and with diffused black fascia below it from antemedial to postmedial line; orbicular and reniform large with brown centres and slight whitish annuli defined by black, the former very oblique elliptical and elongate, the latter with its centre defined by brown; an indistinct medial line oblique from costa to median nervure, then dentate; postmedial line double, the outer line indistinct, bent outwards below costa, then dentate, excurved to vein 4, then oblique, some pale points beyond it on costa and a patch in submedian interspace; subterminal line represented by a series of dentate whitish marks defined on inner side by wedge-shaped black marks above veins 7, 4, 3, 2, extending almost to postmedial line, angled outwards at veins 7, 4, 3, and with black streaks in the interspaces from it to the terminal series of small black lunules; cilia fuscous brown, with series of pale points at base and slight waved black line through them. Hind wing deep fuscous brown, the terminal area rather dark; cilia with fine pale line at base expanding into a series of points at the veins; the underside pale tinged with rufous and irrorated with brown, a black discoidal spot, a curved postmedial line with the area beyond it dark brown.

Hab. Japan, Oiwake (*Leech*), 1 ♂ type, Yokohama (*Pryer*), 2 ♂, 3 ♀. *Exp.* 46–54 millim.

2496. Eumichtis satura.

Noctua satura, Schiff. Wien. Verz. p. 83 (1776); Hübn. Eur. Schmett., Noct. f. 75; Dup. Lép. Fr. vi. p. 319, pl. 92. f. 5, and Suppl. iii. p. 236, pl. 22. f. 2; Frr. Neue Beitr. iii. pl. 244.

Noctua porphyrea, Esp. Schmett. iv. pl. 145. f. 5 (1789); Staud. Cat. Lep. pal. p. 171.

Head and thorax purplish fuscous mixed with rufous; tegulæ with black line near tips; patagia with black line near upper edge, the dorsal crests rufous; tarsi with slight ochreous rings; abdomen dark brown, greyish at base, the anal tuft and ventral surface rufous. Fore wing purplish fuscous suffused in parts with pinkish rufous, especially on basal inner area and postmedial area; a sinuous black streak below base of cell and a diffused streak above inner

margin near base; subbasal line represented by double black striæ from costa and cell filled in with pinkish; antemedial line double filled in with pinkish, waved, oblique from costa to submedian fold, then angled inwards on vein 1 and bent inwards to inner margin; claviform small, acute at extremity and indistinctly defined by black, with diffused black streak below it between ante- and postmedial lines; orbicular and reniform with dark centres and pinkish annuli defined by black, the former oblique elliptical, the latter with straight inner edge; traces of a waved medial line oblique from costa to below median nervure; postmedial line double, the outer line indistinct, bent outwards below costa, then dentate, excurved to vein 4, then incurved, some pale points beyond it on costa; the postmedial area suffused with pinkish rufous especially in submedian interspace; subterminal line ochreous white, defined on inner side by small dentate black marks below costa and at middle, angled outwards at veins 7, 4, 3, and with slight dark streaks beyond it in the interspaces to the terminal series of black points; cilia fuscous with a series of ochreous points at base. Hind wing fuscous brown with an ochreous tinge; a fine dark terminal line; cilia with series of ochreous points at base and dark line at middle; the underside pale ochreous, the costal area tinged with rufous and irrorated with brown, a black discoidal lunule, curved postmedial line, and traces of diffused subterminal line.

Hab. Britain; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Italy; Dalmatia, Leech Coll.; Russia, Livonia, Zeller Coll., Urals; W. Siberia, Altai; E. Siberia, Amurland, 1 ♀, Ussuri. *Exp.* 44–52 millim.

Larva. Meyr. Brit. Lep. p. 132; Barrett, Lep. Brit. iv. p. 112, pl. 149. f. 2.

Pinkish brown, darker above; dorsal line indistinct, interrupted; subdorsal series of indistinct oblique grey streaks; spiracular line greenish yellow; head brown. Food-plants: *Humulus*, *Lonicera*, Cherry, &c. 7–8.

2497. Eumichtis adjuncta. (Plate CIV. fig. 7.)

Hadena adjuncta, Moore, P. Z. S. 1881, p. 357; Hmpsn. Moths Ind. ii. p. 209.

Head and thorax grey mixed with dark brown and fuscous, sometimes tinged with rufous; frons with black bar; tegulæ with black line towards tips; patagia with blackish outer edge; tarsi blackish ringed with white. Fore wing grey, almost wholly suffused with purplish or reddish brown and irrorated with fuscous; subbasal line represented by double black striæ from costa and cell; a sinuous black streak in base of submedian fold and an oblique streak above inner margin before the antemedial line, which is double, the inner line indistinct, oblique, excurved in the interspaces and angled inwards on the veins; claviform defined by black, small or elongate, acute at extremity and with strong black streak from it to postmedial line; orbicular and reniform large, with slight whitish

annuli defined by black, the former more or less oblique elliptical, open above and sometimes below, the latter somewhat angled inwards on median nervure and with irregular outer edges angled outwards at extremities and middle; a slight sinuous medial line oblique from costa to vein 2, then approximated to the postmedial line, which is double filled in with grey, the outer line indistinct, bent outwards below costa, then dentate, excurved to vein 4, then oblique, incurved and stronger in submedian interspace, some pale points beyond it on costa: the veins of terminal area streaked with black: subterminal line whitish, somewhat dentate, angled outwards at veins 7, 6, 4, 3, defined on inner side by small wedge-shaped brown spots and with slight dark streaks beyond it in the interspaces, the area beyond it slightly darker; a terminal series of small black lunules and waved terminal line; cilia blackish with fine white line at base. Hind wing pale suffused with brown and sometimes tinged with rufous, the veins and terminal area darker; a fine waved terminal line; cilia white with a blackish line through them; the underside whitish suffused and irrorated with brown, a discoidal spot, rather diffused waved postmedial line, and traces of diffused subterminal band.

Hab. Kashmir, Dugi Pass (*Thompson*), 3 ♂, 1 ♀, Rala (*McArthur*), 1 ♂, Scind Valley (*Leech*), 1 ♂, Goorais Valley (*Leech*), 1 ♂; Punjab, Kulu, 1 ♀, Thundiani, 1 ♀, Dalhousie, 1 ♀ type; Sikhim Tibet, Yatong (*Hobson*), 1 ♀. *Exp.* 40–54 millim.

2498. Eumichtis adusta.

Noctua adusta, Esp. Schmett. iv. pl. 149. ff. 1, 2 (1788); Dup. Lép. Fr. vi. p. 316, pl. 92. f. 6; & Suppl. iii. p. 233, pl. 22. f. 1; Frr. Neue Beitr. pl. 63. f. 2; Staud. Cat. Lep. pal. p. 171.
Noctua porphyrea, Scriba, Beitr. Ins. p. 145, pl. x. f. 4 (1790).
Noctua aquilina, Bork. Eur. Schmett. iv. p. 381 (1792).
Noctua duplex, Haworth, Lep. Brit. p. 190 (1809).
Noctua valida, Hübn. Eur. Schmett., Noct. ff. 606–8 (1827).
Noctua vultarina, Frr. Beitr. i. pl. 63. f. 1 (1827); Herr.-Schäff. Eur. Schmett., Noct. f. 403.
Hadena satura, Steph. Ill. Brit. Ent., Haust. ii. p. 181 (1829).
Hadena chardinyi, Dup. Lép. Fr., Suppl. iii. pl. 21. f. 4 (1836).
Hadena pavida, Boisd. Gen. et Ind. Meth. p. 120 (1840); Herr.-Schäff. Eur. Schmett. ii. p. 280, Noct. f. 497.
Hadena baltica, Hering, Stett. ent. Zeit. 1846, p. 237; Frr. Neue Beitr. pl. 509. f. 4.
Mamestra sylvatica, Bell, Ann. Soc. Ent. Fr. 1861, p. 29, pl. 2. f. 11.
Hadena vicina, Alph. Hor. Ent. Soc. Ross. xvii. p. 67 (1882); id. Rom. Mem. v. p. 162.
Hadena grisescens, Stndf. Berl. ent. Zeit. 1893, p. 361.
Hadena mœsta, Staud. Iris, x. p. 335 (1897).

Head and thorax rufous mixed with some grey and black; palpi blackish at sides; frons with black bar; tegulæ with some black at base and black medial line; tarsi fuscous ringed with white; abdomen rufous dorsally suffused with fuscous, the male with tufts of white hair from the stigmata. Fore wing bright rufous, the veins and terminal area suffused with leaden-fuscous: a sinuous black line below base of cell; subbasal line represented by double

black striæ from costa and cell; a black streak above inner margin near base; antemedial line double, waved, with white points before it on median nervure and vein 1, oblique from costa to submedian fold; claviform elongate, defined by black, acute at extremity and with black streak from it to postmedial line; orbicular and reniform defined by black, the former round with some black in centre, the latter with black lunule in centre and some white on outer edge which is irregular; postmedial line indistinctly double, bent outwards below costa, then somewhat dentate and produced to

Fig. 108.—*Eumichtis adusta*, ♂. ½.

black and white streaks on the veins, oblique below vein 4, some white points beyond it on costa; subterminal line formed of white lunules defined on inner side by dentate black marks and with black streaks beyond it in the interspaces, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of small black lunules; cilia rufous and fuscous with fine pale line at base, intersected with whitish. Hind wing white tinged with brown, the veins, costal, inner, and terminal areas suffused with reddish brown, some whitish just before termen from vein 3 to tornus; a fine brown terminal line; cilia whitish with a brown line through them: the underside with the costal area suffused and irrorated with brown, a slight discoidal lunule, traces of a sinuous postmedial line and diffused subterminal band.

Ab. 1. *baltica*. Thorax and fore wing dark, with the markings less prominent.—N. Germany, Finland, Livonia.

Ab. 2. *chardinyi*. Fore wing much darker and variegated with white.—S. Russia.

Ab. 3. *sylvatica*. Fore wing dark grey, indistinctly marked, with hardly any brown tinge.—Corsica.

Ab. 4. *vicina*. Fore wing pale violet-brown with the markings distinct.—Tibet.

Ab. 5. *mœsta*. Smaller and darker, fore wing blackish.—E. Siberia.

Hab. Britain, Shetland, Leech Coll., England, Leech Coll., Ireland, Leech Coll.; France; Denmark, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller Coll.; Hungary; Switzerland, Zeller Coll.; Spain, Gibraltar (*J. J. Walker*); Corsica (*Verbury*); N. Italy; Iceland; Scandinavia; Finland; Russia, Livonia, Leech Coll., St. Petersburg, Zeller Coll.; Crete (*Miss*

Bate), 1 ♂; Cyprus (*Glaszner*), 1 ♀; Armenia; Asia Minor, Amanus Mts., 1 ♂; W. Siberia, Altai; W. Turkestan, Saisan, Issyk Kul, Ferghana: E. Turkestan, Ili; Tibet, Amdo; E. Siberia, Amurland, Kamschatka. *Exp.* 42–48 millim.

Larva. Meyr. Brit. Lep. p. 130; Barrett, Lep. Brit. iv. p. 117, pl. 150. f. 2. Green often mixed or suffused with rosy purple; dorsal and subdorsal lines dark-edged; spiracular line white or greenish yellow; head ochreous or greenish. Food-plants: *Galium*, *Origanum*, *Achillea*, &c. 8–4.

2499. Eumichtis solieri.

Hadena solieri, Boisd. Ind. Meth. p. 120 (1840); Dup. Lép. Fr., Suppl. iii. p. 238, pl. 22. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 152; Mill. Icones, i. p. 213, pl. 4. ff. 3–5; Staud. Cat. Lep. pal. p. 171.

Hadena arabs, Oberth. Ét. Ent. vi. p. 88, pl. xi. f. 8 (1881); Staud. Cat. Lep. pal. p. 173.

♂. Head and thorax red-brown mixed with pinkish white; frons with black bar; tegulæ with black medial line; metathoracic crest blackish; tarsi black with pale rings; abdomen pale rufous, whitish at base, the dorsal crests dark. Fore wing pale rufous irrorated with ochreous-white scales, the medial area slightly and the terminal area strongly suffused with purplish fuscous, the veins with dark streaks; a sinuous black streak below base of cell and a slight oblique streak above inner margin before the antemedial line; subbasal line represented by double black striæ from costa; antemedial line double filled in with greyish, the inner line indistinct, angled outwards below costa and in cell and inwards on the veins, excurved below cell and above inner margin; claviform defined by black, with an oblique streak from its extremity to the postmedial line; orbicular and reniform defined by black, the former round, the latter with its inner edge straight, some white points on its outer edge which is irregular; a very indistinct waved medial line, oblique from costa to lower angle of cell, then inwardly oblique; postmedial line double at costa, then single, bent outwards below costa, then dentate and produced to black and white points on the veins, excurved to vein 4, then strongly incurved, some pale points beyond it on costa; subterminal line indistinct, whitish, angled inwards above vein 7, outwards at veins 7, 4, 3, then incurved, with slight brown streaks in the interspaces from it to the terminal series of black points; cilia fuscous intersected with rufous. Hind wing yellowish white, the veins brown; a slight postmedial line; some slight dark suffusion on terminal area, a fine dark terminal line; cilia ochreous with dark line through them; the underside with the costal and terminal areas slightly irrorated with brown, a small black discoidal spot and crenulate postmedial line.

♀. Deeper red-brown; hind wing wholly suffused with brown, the base slightly paler.

Ab. 1. More suffused with fuscous and less tinged with rufous. —Capri.

Ab. 2. *arabs*. Paler brown; fore wing with the reniform obsolescent.—Algeria.

Hab. S. France, Zeller, Frey, and Leech Colls.; Spain: N. Italy, Frey Coll., Capri (*C. S. Browne*); Dalmatia, Leech Coll.; Greece, Leech Coll.; Algeria; S. Russia, Sarepta, Zeller Coll.; Asia Minor, Bithynia; Syria, Beirut (*Jessop*), 1 ♀. *Exp.* 38–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 238; Hffm. Raup. p. 96, pl. 27. f. 11.

Yellowish brown, with fine dorsal line with whitish suffusion below it and oblique brown subdorsal streaks; lateral line yellowish. Food-plants: *Cyclamen*, *Valeriana tuberosa*, &c. 1–2.

2500. Eumichtis sommeri.

Hadena sommeri, Lef. Ann. Soc. Ent. Fr. 1836, p. 391, pl. 10. ff. 1, 2; Dup. Lép. Fr., Suppl. iii. p. 586, pl. 49. f. 1; Auriv. Bih. K. S. Vet.-Akad. Handl. xv. 4. p. 15, pl. 1. ff. 9, 10; Mill. Icones, ii. p. 61, pl. 58. ff. 4–6; Staud. Cat. Lep. pal. p. 171; Smith, Cat. Noct. N. Am. p. 137.
Hadena grœnlandica, Zett. Ins. Lap. p. 939 (1840).
Hadena picticollis, Zett. Ins. Lap. p. 939 (1840).
Hadena surtur, Herr.-Schäff. Eur. Schmett. vi. p. 178, Noct. f. 638 (1856).
Crymodes islandiæ, Mill. Icones, iii. p. 459 (1877).

Head and thorax grey-white mixed with fuscous; frons with black bar; tegulæ with black medial line; patagia with some black scales near upper edge; tarsi fuscous ringed with white; abdomen grey suffused with fuscous, whitish at base. Fore wing grey suffused with fuscous, the veins with slight dark streaks; subbasal line represented by black striæ from costa and cell defined by grey on outer side; antemedial line black defined by whitish on inner side, slightly angled outwards below costa, oblique to submedian fold, then angled inwards on vein 1 and outwards above inner margin; claviform large, indistinctly defined by black; the medial area with black-brown suffusion in and beyond cell and from above submedian fold to inner margin; orbicular and reniform grey defined by black, the former rather triangular, the latter with irregular outline; traces of a medial line oblique from costa to median nervure, then inwardly oblique, waved; postmedial line double filled in with whitish, bent outwards below costa, oblique to vein 5 where it is acutely angled, then obliquely incurved, minutely dentate and produced to black and white points on the veins, some white points beyond it on the veins; subterminal line white, dentate, defined on inner side by rather large diffused dentate blackish marks, angled outwards at vein 7 and dentate to termen at veins 4, 3, the area beyond it darker, with black streaks in the interspaces from it to the terminal series of black lunules; cilia fuscous intersected with white. Hind wing white, the veins, costal, inner, and terminal areas tinged and irrorated with fuscous; a slight discoidal lunule, indistinct postmedial line, and diffused subterminal band; a fine dark terminal line; cilia white with a brown line through them.

Ab. 1. *islandiæ*. More or less tinged with reddish brown instead of fuscous; fore wing less uniform and more variegated.—Iceland, Faroe Is.

Hab. Greenland; Labrador; Faroe Is.; Iceland, Zeller Coll.; Lapland. *Exp.* 40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 238; Hffm. Raup. p. 96.

Reddish brown above, yellow ventrally. Food-plants: *Hieraceum Leontodon*, &c. 5–6.

2501. Eumichtis sepultrix. (Plate CIV. fig. 8.)

Mamestra sepultrix, Guen. Noct. i. p. 200 (1852).
Hadena expulsa, Guen. Noct. ii. p. 93 (1852).
Hadena lutra, Guen. Noct. ii. p. 94 (1852).
Euplexia emergens, Wlk. xi. 544 (1857).
Euplexia indocilis, Wlk. xi. 545 (1857).

♂ (*lutra*). Head and tegulæ red-brown mixed with dark brown, the latter with slight dark medial line and dark tips; thorax fuscous brown slightly irrorated with white, the patagia with black line near upper edge, the prothoracic crest with two white points; tarsi ringed with white; abdomen greyish brown. Fore wing red-brown suffused with fuscous and greyish, the costal and postmedial areas redder; subbasal line represented by double black striæ from costa and cell; antemedial line indistinctly double, oblique, slightly waved; claviform moderate defined by black; orbicular and reniform defined by black, the former elliptical and forming a lobe below the cell, the latter with dark centre and white annulus, rather constricted at middle; traces of a waved medial line; postmedial line indistinctly double, bent outwards below costa, then waved, excurved to vein 4, then oblique, some white points beyond it on costa and a prominent yellowish white patch between veins 7 and 5; subterminal line whitish defined by brown on inner side, minutely waved, slightly angled outwards at vein 7 and excurved at middle, with black streaks beyond it in the interspaces and before it above vein 7; cilia with a fine pale line at base. Hind wing reddish brown tinged with fuscous; cilia whitish with a fuscous line through them; the underside whitish thickly irrorated with brown, the terminal area suffused with brown, a discoidal lunule and diffused curved somewhat dentate postmedial line.

♀ (*sepultrix*). Thorax and fore wing greyer and without the red-brown shades.

Ab. 1. *indocilis*. Head and thorax fuscous irrorated with grey; fore wing fuscous brown suffused with grey and with only slight rufous tinge; outer part of reniform white and with a large obliquely-curved whitish patch beyond it between veins 7 and 2; a whitish patch beyond postmedial line above inner margin; hind wing with whitish bar below vein 2 just before termen.

Hab. N. S. Wales, Sydney (*Raynor*), 2 ♀; Victoria (*Bakewell*), 2 ♀, Gisborne (*Lyell*), 1 ♀; Tasmania (*Beaufort*), 1 ♂ type *emergens* (*Allport*), 1 ♂, 1 ♀, (*Smith*), 1 ♀, (*Doubleday*), 1 ♀ type *indocilis*, Hobart (*J. J. Walker*, *Norman*), 3 ♀. *Exp.* 38–44 millim.

Sect. V. Antennæ of male with fasciculate cilia.

A. Fore wing with the ground-colour pale green ..... *venusta*.
B. Fore wing with the ground-colour not green.
a. Fore wing with the subterminal line angled outwards at veins 4, 3, and forming a distinct ≷-mark.
*a*¹. Fore wing black-brown with hardly any grey irroration ..... *ducta*.
*b*¹. Fore wing fuscous-brown strongly irrorated with grey ..... [illegible].
b Fore wing with the subterminal line slightly angled outwards at veins 4, 3, but not forming a distinct ≷-mark.
*a*¹. Fore wing with black streak below base of cell.
*a*². Fore wing red-brown suffused with fuscous ... *accipitrina*.
*b*². Fore wing grey more or less suffused with brown ..... *monochroma*.
*b*¹. Fore wing without black streak below base of cell.
*a*². Fore wing with diffused fuscous beyond subterminal line.
*a*³. Fore wing with distinct blackish centre to orbicular ..... [illegible].
*b*³. Fore wing with slight dark irroration in orbicular ..... [illegible].
*b*². Fore wing with rounded dark spot beyond subterminal line above tornus ..... *roboris*.
c. Fore wing with the subterminal line excurved at middle but not dentate at veins 4, 3.
*a*¹. Fore wing with pale dentate mark on base of vein 2.
*a*². Hind wing pale grey with slight postmedial line ..... [illegible].
*b*². Hind wing black-brown without postmedial line ..... *intermissa*.
*b*¹. Fore wing without pale dentate mark on base of vein 2.
*a*². Fore wing with the ante- and postmedial lines distinct.
*a*³. Fore wing with the ground-colour red-brown ..... [illegible].
*b*³. Fore wing with the ground-colour purplish grey ..... *mesophæa*.
*c*³. Fore wing with the ground-colour fuscous black ..... [illegible].
*b*². Fore wing fuscous black, the ante- and postmedial lines obsolete ..... *maida*.

2502. Eumichtis venusta. (Plate CIV. fig. 9.)

Lamprosticta venusta, Leech, P. Z. S. 1889, p. 504, pl. li. f. 5.

♂. Head and thorax white slightly tinged with emerald-green; sides of palpi, lower part of frons, and a bar at middle black; antennæ blackish except at base; tegulæ with black spots at middle and sides and black tips; patagia edged with black; dorsum of thorax mostly black; legs banded black and white; abdomen fuscous black irrorated with white and with slight segmental rings. Fore wing greenish white; subbasal line represented by

two black striæ from costa; a black spot at base and a black fascia below the cell with a white point on it; the fascia connected with a spot in cell before antemedial line, which is represented by two striæ from costa, an oblique striga across cell, and two striæ from inner margin; claviform very large, defined by black on inner side, its lower edge bent downwards to vein 1, a small black spot in its extremity; medial area black except costal and inner areas; orbicular and reniform pale green, the former rather quadrate with black spot in its lower part, the latter rather constricted at middle, with black point in upper part and triangular spot in lower connected by a slight line; medial line represented by black striæ from costa and cell; postmedial line with two points on costa, bent outwards and obsolete below costa, then double, the inner line bounding the black area, the outer interrupted, oblique from vein 6 to 2, strongly incurved below reniform and double at inner margin, with slight oblique green streak before it above vein 1 and some black points beyond it on costa; subterminal line represented by an oblique black bar from costa, some small dentate marks at middle and a large mark at vein 2; a terminal series of small black lunules with blackish bar before them at veins 6, 5, and larger spot at vein 2; cilia chequered white and black interrupted by a white line. Hind wing whitish suffused with fuscous brown, the terminal area fuscous, broad at costa, narrowing to tornus; cilia chequered fuscous and white; the underside white with some black on costa at base and apex, a slight streak in base of cell, a discoidal spot and waved postmedial line showing through to upperside.

Hab. Japan, Yokohama (*Pryer*), 1 ♂ type. *Exp.* 40 millim.

2503. Eumichtis ducta. (Plate CIV. fig. 10.)

Hadena ducta, Grote, Bull. U.S. Geol. Geog. Surv. Terr. iv. p. 176 (1878) Smith, Cat. Noct. N. Am. p. 136.

♀. Head and thorax black-brown mixed with grey; antennæ ringed with white; frons with black bar; tegulæ with black medial line; patagia with some black scales near upper edge; tarsi black with white rings; abdomen black-brown mixed with grey. Fore wing black-brown tinged with purple and slightly irrorated with white; subbasal line represented by two slight black striæ from costa; a curved black streak below base of cell; antemedial line indistinctly double, angled inwards on the veins, oblique to submedian fold; claviform defined by black, acute at extremity and with streak from it to postmedial line; orbicular and reniform large irrorated with white and defined by black, incompletely above, the former round, the latter with irregular outer edge with small white spots on it; medial line indistinct, waved, oblique from costa to vein 2; postmedial line indistinctly double, bent outwards below costa, then strongly dentate and produced to black and white points on the veins, strongly incurved below vein 4, some white points beyond it on costa; subterminal line white, waved, angled outwards at veins 7, 4, 3, defined on

inner side by dentate black marks and with black streaks from it to termen; cilia black-brown intersected with white and with fine whitish lines at base and middle. Hind wing black-brown, the cell and interspaces beyond and below it whitish; cilia white with a black-brown line through them; the underside white irrorated with black-brown, a discoidal spot and sinuous postmedial line.

Hab. Canada, Quebec (*Begin*), 1 ♀; U.S.A., Maine, 1 ♀ type, New York. *Exp.* 50 millim.

2504. Eumichtis versuta. (Plate CIV. fig. 11.)

Hadena versuta, Smith, Ent. News, vii. p. 27, pl. xv. f. 14 (1896); Dyar, Cat. Lep. N. Am. p. 115.

Head and thorax fuscous brown mixed with grey; frons with black bar; tegulæ with black medial line; tarsi black ringed with white; abdomen fuscous mixed with grey, the dorsal crests darker. Fore wing fuscous brown mixed with grey and with paler patches in submedian interspace before the antemedial and beyond the postmedial line; a sinuous black streak below base of cell; subbasal line represented by two black striæ from costa; antemedial line double filled in with greyish, oblique from costa to submedian fold, angled inwards on vein 1 and to inner margin; claviform moderate, defined by black and with a slight pale patch beyond its extremity; orbicular and reniform with slight grey annuli defined by black, the former round or somewhat oblique elliptical, the latter with rather irregular outer edge; traces of an irregular medial line; postmedial line defined by grey on outer side, bent outwards below costa, then dentate and produced to white points on the veins, excurved to vein 4, then incurved, some white points beyond it on costa; subterminal line whitish defined by slight dentate black marks on inner side, somewhat dentate, angled outwards at vein 7, strongly dentate at veins 4, 3 and incurved in submedian interspace, the area beyond it rather darker; a terminal series of small black lunules; cilia with some whitish points. Hind wing whitish tinged with brown, the costal and terminal areas suffused with brown, the veins dark; a slight dark mark followed by a whitish mark on vein 2 towards termen; a fine dark terminal line; cilia whitish with a dark line through them; the underside with the costal and terminal areas irrorated with fuscous, a small discoidal spot and sinuous postmedial line showing through to upperside.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 3 ♀; U.S.A., Colorado (*Cockerell*), 1 ♀. *Exp.* 44–48 millim.

Larva. Dyar, Pr. U.S. Nat. Mus. xxvii. p. 811.

Head greenish luteous reticulated with pale brown; no thoracic shields; somite 11 enlarged; pale green mottled with brown and irrorated with whitish, the dorsal area browner, the subventral area green with white dots, the ventral area green; dorsal line whitish, dark-edged, indented at incisures; tubercles i, ii with brown spots above; spiracular line narrow, white, passing below the spiracles on somites 1 and 11; tubercles small, whitish; setæ small.

2505. Eumichtis accipitrina.

Noctua accipitrina, Esp. Schmett. iv. p. 393, pl. 129. f. 4 (1788).
Noctua tenebrosa, Esp. Schmett. iv. p. 451, pl. 142. f. 2 (1789).
Noctua saportæ, Dup. Lép. Fr. vi. p. 410, pl. 98. f. 4 (1826); Geyer, Eur. Schmett., Noct. ff. 836, 837; Herr.-Schäff. Eur. Schmett., Noct. f. 53; Staud. Cat. Lep. pal. p. 182.
Noctua ilicis, Frr. Neue Beitr. iv. pl. 292. f. 3 (nec Dup.).

Head and thorax red-brown mixed with greyish; frons with black bar; tegulæ with black medial line; patagia with black line near edges; tarsi fuscous with pale rings; abdomen reddish brown mixed with greyish and fuscous. Fore wing red-brown mixed with greyish and suffused and irrorated in parts with fuscous; a sinuous black streak below base of cell; subbasal line represented by double striæ from costa; antemedial line double at costa, then oblique, somewhat dentate, bent inwards to inner margin; claviform defined by black, with pale red somewhat bidentate patch beyond it and black streak from its lower extremity to postmedial line; orbicular and reniform pale reddish with pale annuli defined by black, the former oblique elliptical, the area beyond the latter pale reddish to the postmedial line; an indistinct irregular medial line; postmedial line defined by greyish on outer side, double at costa, bent outwards below costa, then dentate, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line pale slightly defined by brown on inner side, angled outwards at vein 7 and somewhat dentate at veins 4, 3, the area beyond it rather darker with dark streaks in the interspaces to the terminal series of lunules; cilia fuscous intersected with whitish and with pale lines at base and middle. Hind wing whitish, the veins and terminal half suffused with brown, a discoidal lunule, curved postmedial line, blackish terminal line, and slight pale subterminal line; cilia whitish with a brown line through them; the underside whitish, the costal and terminal areas irrorated with red-brown, a black discoidal spot, crenulate postmedial line, and terminal series of slight lunules.

Hab. France, Zeller, Frey, and Leech Colls.; Germany, Leech Coll.; Spain, Castile; Italy; Dalmatia; Greece, Leech Coll.
Exp. 38–40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 222.
Green when young, grey when adult. Food-plant, *Ilex*.

2506. Eumichtis monochroma.

Noctua monochroma, Esp. Schmett. iv. pl. 155. ff. 3–6 (1791); Staud. Cat. Lep. pal. p. 182.
Noctua distans, Hübn. Eur. Schmett., Noct. ff. 522–23; Dup. Lép. Fr. vi. p. 262, pl. 89. f. 4.
Hadena suberis, Boisd. Ind. Meth. p. 72 (1829); Frr. Beitr. ii. pl. 124. ff. 1, 2; Dup. Lép. Fr. vii. p. 268, pl. 117. ff. 1, 2.

Head and thorax grey-brown mixed with some black; frons with black bar; tegulæ with black medial line and black tips; patagia with some black scales near upper edge; tarsi black ringed with

grey; abdomen grey suffused with brown. Fore wing grey suffused with brown and irrorated with fuscous; a slight black streak below base of cell; subbasal line represented by two black striæ from costa; antemedial line double, oblique, slightly waved; claviform broad, defined by black, sometimes with somewhat bidentate greyish mark beyond it, a black streak from its lower extremity to postmedial line; orbicular and reniform with brown centres and greyish annuli defined by black, the former oblique elliptical; an indistinct irregularly waved medial line; postmedial line double filled in with grey, bent outwards below costa, then minutely waved, strongly incurved below vein 4, some pale points beyond it on costa; subterminal line whitish slightly defined by brown on inner side and by fuscous on outer, angled outwards at vein 7, excurved at middle and incurved in submedian interspace, the veins and interspaces of terminal area streaked with black; a terminal series of small black lunules: cilia grey with a fuscous line through them. Hind wing grey suffused with brown, the terminal area darker; cilia grey with a fuscous line through them; the underside whitish irrorated with brown, a small discoidal annulus and sinuous postmedial line showing through to upperside.

Ab. 1. *suberis*. Greyer; fore wing with the postmedial area whitish; hind wing whiter.

Hab. France, Frey and Leech Colls.; Germany, Zeller and Leech Colls.; Austria, Zeller Coll.; Hungary, Leech Coll.; Switzerland; Spain, Catalonia, Andalusia; Corsica; Sardinia; N. Italy; Sicily; Dalmatia, Leech Coll. *Exp.* 32–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 222.

Pale green with yellow lateral stripes. Food-plant, *Quercus*. 5–6.

*2507. Eumichtis leucosticta.

Dryobata leucosticta, Moore, Lep. Atk. p. 129, pl. iv. f. 22 (1882); Hmpsn. Moths Ind. ii. p. 229.

♂. Head and thorax dark olive variegated with white; abdomen fuscous, the terminal half tinged with pink. Fore wing olive, much variegated with white especially on antemedial and postmedial areas; subbasal line double, waved, from costa to submedian fold; antemedial line oblique, waved; claviform with its extremity defined by black; orbicular and reniform white with olive centres and defined by black, the former round and conjoined to a white spot below the cell, the latter oblong; an indistinct waved medial line, excurved in cell; postmedial line double at costa, bent outwards below costa, then dentate and produced to short streaks on the veins, oblique below vein 4; subterminal line only defined by an olive patch before it at costa and the area beyond it olive, angled outwards at veins 7, 4, 3, and bent outwards to tornus; the termen whitish with a series of small black lunules. Hind wing fuscous; the underside tinged with pink with prominent discoidal spot and curved postmedial line.

Hab. Sikhim, Tonglo, 10,000 feet. *Exp.* 32 millim. This species is unknown to me.

2508. Eumichtis protea.

Noctua protea, Schiff. Wien. Verz. p. 84 (1776); Esp. Schmett. iv. pl. 150. f. 6 (1790); Borkh. Eur. Schmett. iv. p. 158, f. 386 (1792); Hübn. Eur. Schmett., Noct. f. 406; Dup. Lép. Fr. vi. p. 259, pl. 89. f. 2; Staud. Cat. Lep. pal. p. 182.

Noctua seladonia, Fabr. Ent. Syst. iii. 2, p. 103 (1794); Steph. Ill. Brit. Ent., Haust. iii. p. 33.

Head and thorax olive-green mixed with black to grey and rufous mixed with black; frons with black bar; tegulæ with medial black line and black tips; tarsi banded with black; abdomen greyish thickly irrorated with black, the base paler. Fore wing olive-green to grey irrorated with black and suffused in places with rufous or fuscous; a double subbasal line from costa to submedian fold

Fig. 109.—*Eumichtis protea*, ♂. ½.

angled inwards in cell; a double oblique irregularly-waved antemedial line; claviform broad, defined by black and with a pale bidentate mark beyond it and black streak from its lower extremity to the postmedial line; orbicular and reniform greenish or grey-white usually defined by black and irrorated with black, the former rather oblique elliptical, the latter broad and sometimes tinged with rufous; an indistinct irregular medial line; postmedial line indistinctly double, bent outwards below costa and strongly incurved below vein 4, some pale points beyond it on costa; subterminal line whitish and often with some whitish before it and defined by black on outer side at middle and in submedian interspace, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of small black lunules. Hind wing greyish suffused with fuscous especially on the veins and terminal area; an indistinct postmedial line and greyish subterminal line bent outwards at vein 2. Underside grey irrorated with brown, both wings with discoidal annulus and curved postmedial line.

Hab. Britain, Scotland, Leech Coll., England (*Doubleday*); France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Hungary, Zeller Coll.; Switzerland, Tyrol, Leech Coll.; Spain, Leech Coll.; Russia, Livonia, Zeller Coll. *Exp.* 32–40 millim.

Larva. Meyr. Brit. Lep. p. 53; Barrett, Lep. Brit. iv. p. 312, pl. 171. f. 1. Pale greyish ochreous or greenish; dorsal line pale yellowish, sometimes edged with dark fuscous; spiracular line brownish or yellow; head brownish. Food-plant, Oak. 4–6.

2509. Eumichtis roboris.

Noctua roboris, Hübn. Eur. Schmett., Noct. f. 847 (1827); Boisd. Ind. Meth. p. 72 (1829); Frr. Beitr. iv. pl. 292. f. 2; Dup. Lép. Fr., Suppl. iii. p. 159, pl. 15. f. 4; Herr.-Schäff. Eur. Schmett., Noct. f. 52; Staud. Cat. Lep. pal. p. 182.

Hadena cerris, Boisd. Ind. Meth. p. 121 (1840); Herr.-Schäff. Eur. Schmett., Noct. f. 153.

Head and thorax brown mixed with grey; frons with black bar; tegulæ with strong medial black line; patagia with some black scales near upper edge; tarsi banded with black; abdomen grey irrorated and suffused with fuscous, the dorsal crests tipped with black. Fore wing olive-green mixed with rufous, the terminal area often whitish, the veins with slight dark streaks; subbasal line double, angled inwards in cell and ending at vein 1; antemedial line double, the inner line indistinct, angled outwards below costa, then obliquely excurved; claviform broad and truncate, defined by black except above, with bidentate pale mark beyond it and black streak from its lower extremity to postmedial line; orbicular and reniform large, greyish, tinged with brown and defined by black, their centres defined by fuscous, the former elliptical: postmedial line double at costa, then single, bent outwards below costa, then minutely dentate, strongly incurved below vein 4, some white points beyond it on costa; subterminal line whitish, usually defined by small dentate dark marks on inner side, excurved below costa and somewhat dentate at veins 4, 3, a black mark beyond it extending to termen; a terminal series of small black lunules. Hind wing whitish largely suffused with brown, especially on the veins and terminal area, in female nearly uniformly suffused; the underside whitish irrorated with brown, a black discoidal lunule and traces of a curved postmedial line.

Ab. 1. *cerris*. Greyish, without the olive-green tinge.

Hab. France; Germany, Zeller and Frey Colls.; Austria, Tyrol; Hungary, Zeller and Leech Colls.; Spain, Andalusia, Catalonia; Sardinia; Sicily; Istria; Dalmatia; Macedonia; Asia Minor, Taurus, Pontus. *Exp.* 26–34 millim.

Larva. Kirby, Butt. & Moths Eur. p. 222; Hffm. Raup. p. 94, pl. 26. f. 20.

Reddish grey, with dorsal pale line and dark curved transverse lines; subdorsal line fuscous; lateral line brown. Food-plant, *Quercus*.

*2510. Eumichtis contermina. (Plate CIV. fig. 12.)

Dryobota contermina, Græs. Berl. ent. Zeit. 1892, p. 308; Staud. Cat. Lep. pal. p. 182.

Head and thorax brownish grey slightly mixed with brown; sides of palpi and frons blackish; tegulæ with strong black line near tips; patagia edged with blackish; prothoracic crest with blackish line near tips; tarsi with blackish bands; abdomen grey suffused and irrorated with brown. Fore wing grey tinged and

irrorated with brown, the medial area suffused with brown except towards costa and inner margin; subbasal line double, black, curved, from costa to submedian fold; antemedial line double, interrupted below costa, then oblique, slightly angled outwards on vein 1 and bent inwards to inner margin; claviform large, defined by black, acute at extremity, a rather paler patch above its extremity; orbicular and reniform with brownish centres and whitish annuli defined by black, the former oblique elliptical, open above, the latter with its upper extremity strongly produced; a slight somewhat dentate medial line, oblique from costa to lower angle of cell, then inwardly oblique; postmedial line double, the outer line indistinct except towards costa, strongly bent outwards below costa, then minutely dentate, slightly incurved at discal fold and oblique below vein 4, some white points beyond it on costa; the veins of terminal area with slight dark streaks; subterminal line formed of slight whitish marks defined on both sides by slight brownish suffusion, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of slight black lunules; cilia with a fine white line at base. Hind wing pale grey suffused with brownish, the veins slightly darker; an indistinct sinuous postmedial line and slight diffused subterminal band; a fine dark terminal line; cilia ochreous white with a dark line through them; the underside whitish, the costal and terminal areas irrorated with fuscous, a small discoidal spot, and postmedial line almost obsolete except on costal area.

Hab. W. Turkestan, Issyk Kul, Alexander Mts., types † ♂ ♀ in Coll. Püngeler. *Exp.* 34–38 millim.

2511. Eumichtis intermissa. (Plate CIV. fig. 13.)

Dichonia intermissa, Butl. Trans. Ent. Soc. 1886, p. 134.

Head and thorax olive-green mixed with dark brown and a few black scales; palpi blackish at sides; tegulæ with medial black line; patagia with some black scales near upper edge; tarsi with pale rings; abdomen dark brown above, paler below. Fore wing olive-green suffused in parts with purplish grey and slightly irrorated with black; a slight black streak below base of cell; subbasal line represented by double black striæ from costa; antemedial line indistinctly double, oblique, waved, angled inwards on vein 1; claviform defined by black except above, with somewhat bidentate ochreous patch beyond it and black streak from its lower extremity to postmedial line; orbicular and reniform rounded, purple-grey defined by black, the latter with some rufous in centre; an indistinct waved medial line; postmedial line defined by purple-grey on outer side and with rufous patch beyond it in submedian interspace, bent outwards below costa, then dentate, incurved below vein 4; subterminal line pale, excurved below costa and at middle and angled inwards in discal and submedian folds, where there are black marks beyond it; a terminal series of black lunules; a fine pale line at base of cilia. Hind wing uniform black-brown with a

fine whitish line at base of cilia; the underside greyer, with slight discoidal point and curved postmedial line.

Hab. Japan, Yokohama (*Pryer*), 3 ♂, 4 ♀, type. *Exp.* 32–38 millim.

2512. Eumichtis saliaris. (Plate CIV. fig. 14.)

Apamea saliaris, Guen. Noct. i. p. 212 (1852).
Apamea spumigera, Guen. Noct. i. p. 212 (1852).
Euplexia confundens, Wlk. xi. 544 (1857).
Euplexia exclusa, Wlk. xi. 545 (1857).
Hadena familiaris, Wlk. xi. 597 (1857).
Hadena punctisigna, Wlk. xi. 600 (1857).

Head and thorax bright rufous slightly mixed with fuscous; palpi with blackish patch on second joint at sides; tegulæ with brown medial line; tarsi fuscous with pale rings; abdomen rufous dorsally tinged with brown. Fore wing bright rufous slightly irrorated with black, the medial area and terminal area except towards apex suffused with blackish; subbasal line indistinctly double, waved, from costa to submedian fold; a black mark on inner margin near base; antemedial line double at costa, then single, oblique, slightly sinuous, acutely angled outwards above inner margin; claviform short, slightly defined by blackish; orbicular and reniform incompletely defined by black, the former oblique elliptical, forming a lobe below the cell, the latter with pale spot on its outer side; postmedial line double at costa, then single, indistinct and interrupted, bent outwards below costa, dentate at vein 6 and with black points beyond it on median nervules, angled outwards in submedian fold, then oblique, some pale points beyond it on costa; subterminal line pale, slightly defined by brown on inner side and with some blackish beyond it except towards costa and before it in submedian interspace, angled outwards at vein 7 and excurved below middle, the veins beyond it with blackish streaks; a terminal series of small black lunules; cilia chequered rufous and fuscous. Hind wing fuscous with a rufous tinge; some pale and blackish marks on vein 2 towards termen; cilia rufous; the underside pale rufous, the terminal area suffused with fuscous, a discoidal spot and diffused waved postmedial line.

Ab. 1. *exclusa*. Thorax and fore wing darker and largely suffused with fuscous.

Ab. 2. *confundens*. Bright rufous; fore wing with pure white spot on reniform.

Ab. 3. *familiaris*. Dark; fore wing with pure white spot on reniform.

Ab. 4. *spumigera*. Fore wing with the spot on reniform white and with large pale patches beyond the postmedial line between veins 7 and 2 and above inner margin.

Hab. Queensland, Moreton Bay (*Diggles*), 1 ♂; N. S. Wales (*Daniel, Raynor*), 1 ♂, 2 ♀; Victoria, Gisborne (*Lyell*), 1 ♂;

Tasmania, Hobart (*Doubleday*, *Butler*, *Smith*, *Alport*, *Norman*), 6 ♂, 6 ♀, types *confundens*, *familiaris*, *punctisigna*, *exclusa*. *Exp.* 34–42 millim.

*2513. Eumichtis mesophæa. (Plate CIV. fig. 15.)

Eumichtis mesophæa, Turner, ined.

♂. Head and thorax clothed with grey-brown and black scales; sides of palpi and frons black; an oblique whitish line across patagia; metathoracic crest tipped with whitish; tarsi fuscous, with pale rings; abdomen grey-brown with slight whitish segmental rings, the dorsal crests tipped with whitish, the ventral surface pale tinged with rufous. Fore wing purplish grey; subbasal line black, double, waved, from costa to submedian fold; a triangular black-brown mark with whitish streak on its inner edge above inner margin before the antemedial line, which is double, angled outwards and interrupted below costa, then oblique to submedian fold and curved inwards to inner margin; the medial area black-brown except towards costa and inner margin; claviform absent; orbicular and reniform small, with grey centres and slight whitish annuli defined by black, the former rather oblique elliptical, confluent with a small grey mark defined by black below median nervure and connected with the reniform, which is angled inwards on median nervure and has its outer edge tinged with rufous; a black spot on middle of costa; postmedial line with double black spot at costa, then with two series of black points beyond it on the veins, bent outwards below costa, slightly incurved at discal fold and below vein 4 to inner edge of reniform, some pale points beyond it on costa; subterminal line rufous, defined on each side by blackish and with minute dentate black marks on inner side below costa and at middle, dentate outwards at veins 7, 6, 4, 3; a terminal series of slight black lunules; cilia grey mixed with black and with fine pale line at base. Hind wing fuscous, the basal and inner areas browner; cilia pale brown with fuscous line through them and grey tips; the underside grey irrorated with fuscous, the terminal half suffused with black, a small discoidal spot and curved postmedial and subterminal lines.

Hab. Victoria, Beaconsfield (*Lyell*), type † ♂ in Coll. Drake. *Exp.* 34 millim.

2514. Eumichtis extima. (Plate CIV. fig. 16.)

Hadena extima, Wlk. xi. 599 (1857).

♀. Head and thorax fuscous black tinged with grey; tarsi ringed with white; abdomen brownish white irrorated with dark brown. Fore wing black-brown suffused with leaden grey; subbasal line represented by two black striæ from costa and one from cell; antemedial line indistinct, oblique, slightly sinuous; claviform

short, defined by black; orbicular and reniform indistinctly defined by black, the former rather oblique elliptical, the latter with some white points on its outer side; traces of a waved medial line: postmedial line double, bent outwards below costa, then slightly waved, slightly angled outwards at vein 2, then oblique, diffused whitish patches beyond it between veins 7 and 2 and above inner margin and some white points on costa; subterminal line pale, defined on each side by blackish, slightly waved, with black streaks beyond it in the interspaces; cilia with a fine whitish line at base. Hind wing with the basal half brownish white, the terminal half fuscous; some dark streaks on vein 2 towards termen; cilia whitish and fuscous; the underside white irrorated with fuscous, the terminal area suffused with fuscous, a slight discoidal lunule and diffused sinuous postmedial line.

Ab. 1. Fore wing with small ochreous spot on reniform.

Ab. 2. Fore wing with larger white spot on reniform, and with whitish patches beyond the postmedial line between veins 7 and 2 and above inner margin.

Hab. Australia, 1 ♀ type; Queensland, Duaringa (*Lower*), 1 ♀; W. Australia (*Richardson*), 1 ♀. *Exp.* 36–40 millim.

2515. Eumichtis maida. (Plate CIV. fig. 17.)

Hadena maida, Dyar, Can. Ent. xxxvi. p. 30 (1904).

♀. Head and thorax black-brown irrorated with a few whitish scales; tarsi ringed with white; abdomen dark-brown slightly irrorated with grey and suffused with crimson-red at sides. Fore wing fuscous black-brown irrorated with a few white scales especially on the veins, the inner margin tinged with red-brown; no trace of subbasal or antemedial lines; claviform large, defined by black, acute at extremity; orbicular oblique oblong, defined by black, open above; reniform defined by black, with slight white line on inner side and lunule at centre and prominent lunule on outer edge, its lower edge angled inwards on median nervure; postmedial line obsolete, some white points on apical part of costa; subterminal line represented by a series of slight black marks in the interspaces with white scales on their outer edges, and a more prominent lunule outwardly defined by white in submedian interspace; a fine waved black terminal line; cilia with fine white lines at base and middle. Hind wing greyish uniformly suffused with fuscous; cilia grey mixed with black, with whitish line at base followed by a dark line; the underside whitish slightly suffused with purplish red and irrorated with fuscous; a black discoidal lunule and postmedial series of minute streaks on the veins.

Hab. Canada, Br. Columbia, Selkirks, Glacier (*Mrs. Nicholl*), 1 ♀, Kaslo. *Exp.* 42 millim.

Sect. VI. Antennæ of male ciliated.

2516. Eumichtis hita.

Hadena hita, Dogn. Ann. Soc. Ent. Belg. xli. p. 413 (1897).

♂. Head and thorax grey-white mixed with black and slightly tinged with rufous; frons with black bar; tegulæ with black line near tips which are black; patagia with blackish edges; tarsi blackish ringed with white; abdomen grey tinged with reddish

Fig. 110.—*Eumichtis hita*, ♂. ½.

brown, the dorsal crests dark. Fore wing grey-white irrorated with fuscous and tinged with rufous especially in submedian interspace; subbasal line represented by double striæ from costa and one from cell; antemedial line double at costa, then single, waved, angled inwards on vein 1 and outwards above inner margin, crossed by an oblique brown shade from costa; claviform large, dark brown defined by black; orbicular and reniform grey defined by black, the former round with brown centre, the latter large, its centre defined by brown, prominently on inner side; an oblique shade from middle of costa and a waved line from lower angle of cell, closely approximated to the postmedial line, which is double, bent outwards below costa, then minutely waved, strongly excurved to vein 4, then incurved and with white lunule in submedian interspace, some white points beyond it on costa; subterminal line only defined by a dark patch before it at costa, a dentate dark mark beyond it in discal fold, then by small dentate black marks on its inner side and dark marks beyond it below veins 4 and 2; cilia black-brown intersected with white. Hind wing pure white, the veins streaked with brown towards termen, the terminal area suffused with brown from apex to vein 2, on which there is a subterminal black spot; cilia white intersected with fuscous from apex to vein 2; the underside with the costal area irrorated with fuscous, a small discoidal spot and postmedial series of slight streaks on the veins.

Hab. Venezuela, 1 ♂; Ecuador, Loja, type † in Coll. Dognin. *Exp.* 32 millim.

Sect. VII. Antennæ of male almost simple.

A. Fore wing with the orbicular conjoined to a pale mark below cell ..... *photophila.*
B. Fore wing without pale mark below orbicular.
  a. Fore wing without black streak below base of cell ..... *adducta.*
  b. Fore wing with black streak below base of cell ..... *rubrimixta.*

2517. Eumichtis photophila.

Miana photophila, Butl. Trans. Ent. Soc. 1882, p. 120 (♀).
Miana margarita, Butl. Trans. Ent. Soc. 1882, p. 121 (♂).

Head and thorax purplish grey-brown mixed with fuscous and often with olive-green; tarsi black with pale rings; abdomen brownish grey mixed with dark brown. Fore wing purplish grey-brown more or less tinged in parts with olive-green; the costa

Fig. 111.—*Eumichtis photophila*, ♂. ½.

with series of black striæ; a short subbasal black streak above inner margin; an indistinctly double, curved, slightly waved antemedial line; claviform small, defined by black with streak from its extremity to postmedial line; orbicular small, round, defined by black or diffused pale purplish grey sometimes tinged with olive-green, and confluent with a spot below the cell; reniform with fuscous centre and greyish or olive annulus defined by black, somewhat constricted at middle and angled inwards on median nervure; postmedial line indistinct, double, waved, bent outwards below costa, incurved at discal fold and below vein 4, the veins beyond it streaked with blackish; subterminal line reduced to a series of whitish points, either entirely or except towards inner margin, with olive and fuscous marks before and beyond them; a terminal series of small black lunules. Hind wing white, the veins and termen suffused with brown; a diffused curved postmedial line; the underside with the costal and terminal areas suffused with fuscous, a discoidal spot and sometimes a short streak in cell; in female the upperside wholly fuscous brown, on underside thickly irrorated with fuscous.

Hab. Chili (*Edmonds*), 2 ♂, 2 ♀, type and type *margarita*, Talcahuano (*J. J. Walker*), 1 ♂, Mulchen (*Elwes*), 1 ♂, 2 ♀. *Exp.* 24–28 millim.

*2518. Eumichtis adducta.

Hadena adducta, Feld. Reis. Nov. pl. 109. f. 25 (1872).

♂. Head and thorax clothed with pale and dark red-brown scales mixed with some black; tarsi with dark bands; abdomen red-brown. Fore wing grey with a reddish tinge, suffused with brown especially on medial area and with some dark irroration; subbasal line double, waved, from costa to submedian fold; antemedial line double, irregularly waved, rather oblique; claviform

defined by black at extremity; orbicular and reniform well developed, their centres defined by brown, the former irregularly rounded; a waved medial line, oblique below cell; postmedial line double, dentate, filled in with greyish and defined by grey on outer side, excurved from costa to vein 4, then oblique; subterminal line indistinct, waved, greyish, with some ill-defined blackish spots on its inner side; a terminal series of black points. Hind wing yellowish white, the terminal half suffused with fuscous brown; cilia pale with a brown line through them; the underside whitish, the costal area irrorated with brown, a brown striga from costa before middle, small discoidal spot, crenulate postmedial line strongly excurved from costa to vein 2, and diffused subterminal line except on costal area.

♀. Hind wing wholly red-brown.

Hab. Venezuela, type † in Coll. Rothschild. *Exp.* ♂ 40, ♀ 42 millim.

2519. **Eumichtis rubrimixta**, n. sp. (Plate CIV. fig. 18.)

♀. Head and thorax reddish mixed with some fuscous; sides of palpi and frons blackish; patagia with some black scales near upper edge; tarsi black with pale rings; abdomen fuscous with pale brownish segmental bands. Fore wing rufous tinged with fuscous and irrorated with black; a sinuous black streak below base of cell; subbasal line double, waved, from costa to submedian fold; antemedial line single, black, waved; claviform defined by black; orbicular and reniform rufous incompletely defined by black and with some fuscous in centres; the former oblique elliptical, a blackish patch between them in cell; traces of a waved medial line; postmedial line black defined by rufous on outer side, bent outwards below costa, then dentate, incurved below vein 4, some rufous points beyond it on costa; subterminal line indistinct, rufous, defined on inner side by fuscous suffusion and with slight dark dentate marks near middle, excurved below vein 7 and at middle; a terminal series of slight black lunules; cilia rufous and fuscous with dark line through them. Hind wing grey suffused with fuscous except at base, an indistinct postmedial line and dark terminal line; cilia rufous with a dark line through them; the underside whitish, the costal and terminal areas irrorated with fuscous, a dark discoidal lunule and diffused postmedial line.

Hab. Transvaal, Johannesburg (*A. T. Cooke*), 2 ♀ type. *Exp.* 36 millim.

Genus **VALERIA**.

	Type.
Valeria, Steph. Ill. Brit. Ent., Haust. iii. p. 22 (1829)	*oleagina.*
Synvaleria, Butl. Trans. Ent. Soc. 1890, p. 672	*jaspidea.*

Proboscis fully developed; palpi upturned, the 1st and 2nd joints clothed with long hair in front, the 3rd porrect, rather long and dilated at extremity; frons smooth, tufted with long hair; eyes large, rounded; vertex of head with crest; thorax clothed with long rough spatulate scales and hair, the pro- and metathorax with spreading crests; pectus clothed with long hair; abdomen

with series of large dorsal crests and lateral fringes of hair. Fore wing with the termen crenulate; veins 3 and 5 from near angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell, 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Valeria*). Antennæ of male bipectinate with long branches to apex, of female with short branches.

2520. Valeria oleagina.

Bombyx oleagina, Schiff. Wien. Verz. p. 59 (1776); Fabr. Mant. Ins. ii. p. 117 (1786); Esp. Schmett. iii. pl. 60. f. 4; Hübn. Eur. Schmett., Noct. f. 33; Dup. Lép. Fr. vi. p. 370, pl. 95. f. 6; Steph. Ill. Brit. Ent., Haust. iii. p. 23; Staud. Cat. Lep. pal. p. 168.

Head and thorax dark brown mixed with red-brown, grey, and greenish scales; antennæ pale rufous; tarsi black banded with white; abdomen dark reddish brown mixed with some grey. Fore wing dark reddish brown mixed with some grey, the veins streaked with sap-green and black scales; subbasal line double, black filled in with green, from costa to submedian fold; antemedial line black, oblique, sinuous, slightly angled inwards on vein 1; claviform small, pale or whitish, defined by black; orbicular with white annulus defined by black, round; reniform large, white defined by

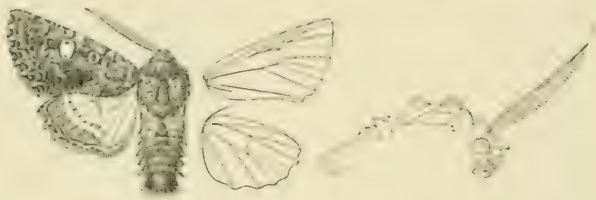


Fig. 112.—*Valeria oleagina*, ♂. ½.

black; an indistinct waved medial line; postmedial line dark, defined by greenish grey on outer side, strongly bent outwards below costa, then minutely waved, incurved below vein 4, some white points beyond it on costa; subterminal line waved, pale, defined by blackish lunules before it below middle, the area beyond it sap-green; a terminal series of small black lunules; cilia reddish brown, with ochreous-white points at base and waved line through them. Hind wing ochreous white; a rather punctiform, sinuous postmedial line; the terminal area suffused with red-brown with a slightly waved whitish subterminal line; cilia brown, whitish at tips; the underside with the basal half of costal area and apical area suffused and irrorated with red-brown, a slight black streak in cell, prominent black discoidal lunule, punctiform postmedial line, and terminal series of small lunules.

Hab. Britain, S. Wales; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller Coll.; Hungary, Leech Coll.; Switzer-

LAND; SPAIN, Castile; N. ITALY; BULGARIA; SYRIA, Mardin. *Exp.* 44 millim.

Larva. Meyr. Brit. Lep. p. 55; Barrett, Lep. Brit. iv. p. 330, pl. 174. f. 2. Somites 1–3 dilated; ochreous much marked with brown; 2nd somite ochreous-yellow in front with a series of fuscous dots; spiracular line ochreous-yellow on abdominal somites, head brown. Food-plant, Blackthorn. 5–6.

SECT. II. Antennæ of male bipectinate with long branches, the apex serrate.

2521. Valeria heterocampa.

Pachætra heterocampa, Moore, Lep. Atk. p. 115, pl. 4. f. 15 (1882); Hmpsn. Moths Ind. ii. p. 223.

♂. Head and tegulæ ochreous white; palpi and frons black at sides, black streaks above eyes and at sides of tegulæ; antennæ brown; front of thorax and patagia black, the patagia ochreous white with black edges, the thorax ochreous white with the metathoracic crest pure white; pectus and legs black, the tibiæ and tarsi ringed with white; abdomen ochreous more or less strongly suffused with black-brown except at base, the dorsal crests black. Fore wing ochreous white suffused with rufous or olive-green, the veins with slight dark streaks; subbasal line black defined by white on outer side, waved, rather broken up into spots, from

Fig. 113.—*Valeria heterocampa*, ♂. ½.

costa to vein 1, a diffused black band beyond it from costa to submedian fold, an oblique patch to vein 1 and an elongate patch below vein 1; antemedial line black defined by white on inner side, angled outwards below costa and on median nervure and inwards on vein 1; the medial area mostly suffused with black and purplish grey; the stigmata large, whitish, tinged with rufous or olive; the orbicular with slight dark centre, connected with a bilobed ochreous mark below the cell and with a fascia from reniform emitted along median nervure; the reniform very large, extending to costal nervure and to below angle of cell, rather quadrate and with some blackish in centre; the terminal half of costa with series of whitish and black patches; postmedial line black with slight whitish line on it, dentate, arising from vein 7, excurved to vein 4, then oblique; subterminal line diffused white defined by black suffusion on inner side except between veins 6 and 4 and towards inner margin, strongly dentate at veins 7, 6,

4, 3, 2, and bent outwards to tornus; the extremity of veins with short black streaks, diffused at veins 6, 5; cilia black intersected with white. Hind wing grey suffused with fuscous leaving a diffused dentate white subterminal band ending at tornus; the terminal part of vein 2 with two black marks; cilia fuscous with fine white line at base expanding into small spots at the veins; the underside whitish irrorated with black, the costal area suffused with black, a dark discoidal lunule and diffused irregular postmedial and subterminal lines.

Hab. Sikhim Tibet, Yatung (*Hobson*), 1 ♂; Sikhim (*Pilcher*), 1 ♂. *Exp.* 40–46 millim.

Sect. III. Antennæ of male bipectinate with short branches, the apical part serrate, of female ciliated.

2522. Valeria viridinigra.

Euplexia icamba, Hmpsn. Moths Ind. ii. p. 222 (1894), nec Swinh.
Euplexia viridinigra, Hmpsn. Moths Ind. iv. p. 510 (1896).

Fore wing red-brown mixed with black-brown and a few white hairs; palpi, pectus, and legs black-brown, the tibiæ and tarsi ringed with white; abdomen black-brown; the dorsal crests and anal tuft with some rufous. Fore wing moss-green more or less suffused with rufous and slightly irrorated with black, the veins with leaden-black streaks, the medial area darker except at costa and inner margin; subbasal line waved, from costa to submedian fold; antemedial area with some black suffusion; antemedial line black,

Fig. 114.—*Valeria viridinigra*, ♂. ½.

angled outwards below costa, oblique to submedian fold, slightly angled inwards on vein 1, then strongly outwards above inner margin; orbicular leaden-black with green annulus defined by black, open above and below or above only, conjoined to an indistinct green annulus defined by black below the cell; reniform very large and ill-defined, green with dark marks on it at upper and lower angles of cell, extending to well below the cell and angled inwards on median nervure to the orbicular; postmedial line strongly angled outward below costa, then dentate, oblique below vein 4 and angled inwards in submedian fold, some white points beyond it on costa; subterminal line whitish defined by blackish suffusion on inner side and with slight dentate black marks before it at middle, angled outwards at vein 7, then dentate;

cilia black-brown mixed with some white scales. Hind wing ochreous white more or less completely suffused with fuscous grey except on terminal area, the veins dark; the termen tinged with green at middle; cilia black-brown mixed with white scales; the underside with black discoidal spot, diffused sinuous postmedial line, and diffused subterminal band showing through to upperside.

Hab. Sikhim Tibet, Yatung (*Hobson*), 1 ♀; Sikhim (*Möller, Elwes*), 5 ♂ type; Assam, Khásis. *Exp.* 44–50 millim.

Sect. IV. Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the ground-colour green ..... *viridimacula.*
B. Fore wing with the ground-colour ochreous white tinged with olive ..... *icamba.*

2523. Valeria viridimacula.

Hadena viridimacula. Græs. Berl. ent. Zeit. 1888, p. 331; Staud. Cat. Lep. pal. p. 173.
Berrhæa japonica, Leech, P. Z. S. 1889, p. 507, pl. 50. f. 11.

Head and thorax moss-green mixed with dark reddish brown; palpi blackish at sides; antennæ brown ringed with green at base; patagia brown at tips; pectus brown mixed with grey; legs blackish, the tibiæ and tarsi with pale rings; abdomen brown irrorated with grey. Fore wing moss-green slightly irrorated with black, the medial and terminal areas with less green, the costal area more thickly irrorated, the veins with purple-brown streaks;

Fig. 115.—*Valeria viridimacula,* ♂. ½.

subbasal line double filled in with green, waved, from costa to submedian fold; antemedial line double at costa, then single, oblique to vein 1, then curved to inner margin, an oblique streak before it above inner margin; claviform small, defined by blackish; orbicular and reniform green defined by black, the former round with some black scales in centre and traces of whitish annulus, the latter open below, with dark mark in lower part and whitish annulus prominent on outer side; a dark medial line oblique from costa to vein 2, then dentate; postmedial line double, the outer line indistinct except towards costa, strongly bent outwards below costa, then dentate and produced to short streaks on veins 7, 6, 4, 3, 1, oblique below vein 4, some green points beyond it on costa; subterminal line whitish, slightly dentate at veins 7, 6, more strongly at 4, 3, 2, incurved at discal fold and below

vein 3; a terminal series of black lunules with green lunules before them; cilia purple-brown intersected with green and with slight green line at base. Hind wing uniform dark brown with waved dark terminal line; cilia ochreous with brown line through them; the underside pale thickly irrorated with brown, the costal area tinged with purplish pink, a discoidal spot and slightly sinuous postmedial line.

Ab. 1. Fore wing without green on medial area except at costal and inner margin.

Hab. E. Siberia, Ussuri; Japan, Oiwake (*Leech*), 1 ♂, Kiushiu, 1 ♀, Yokohama (*Pryer*), 3 ♂, 1 ♀, type. *Exp.* 42–44 millim.

2524. Valeria icamba. (Plate CIV. fig. 19.)

Euplexia icamba, Swinh. A. M. N. H. (6) xii. p. 260 (1893).
Euplexia heterocampoides, Hmpsn. Moths Ind. ii. p. 221 (1894).

♂. Head and tegulæ ochreous white; sides of palpi, frons, and back of head black; tegulæ with diffused blackish medial line; patagia black with oblique white band; vertex of thorax black with white dorsal streak; pectus and legs black-brown, the tibiæ and tarsi ringed with white; abdomen black-brown, whitish at base, the dorsal crests black. Fore wing ochreous white tinged with olive, the medial area mostly suffused with black, the veins slightly streaked with black; subbasal line black defined by whitish on outer side, waved, from costa to vein 1, with a diffused black band beyond it angled outwards in cell and on vein 1, not extending to inner margin; antemedial line black defined by white on inner side, angled outwards below costa and on median nervure, then incurved, slightly excurved above inner margin; orbicular ochreous defined by black except above and with blackish centre, connected with an oblique bilobate ochreous mark below cell which is connected by a streak below median nervure with the reniform, which is very large, extending to costal nervure and below cell, rather quadrate, ochreous defined by black and with some black in centre; postmedial line indistinctly double filled in with whitish, bent outwards below costa, then dentate, excurved to vein 4, then oblique, the costa beyond it black with series of white points; subterminal line very ill-defined, diffused, whitish, angled outwards at vein 7 and strongly dentate at veins 4, 3, 2, where there are dentate black marks on its inner side, the veins beyond it with short black streaks, diffused at veins 6, 5; cilia black intersected with white. Hind wing grey suffused with fuscous, leaving a dentate white subterminal band except towards costa and ending at tornus; cilia blackish mixed with white; the underside whitish thickly irrorated with black-brown, the costal half suffused with black-brown, a slight discoidal lunule and diffused postmedial and subterminal lines.

Hab. Punjab, Kulu; Sikhim Tibet, Yatung (*Hobson*, *Bingham*), 6 ♂; Sikhim (*Möller*, *Elwes*, *Dudgeon*), 6 ♂, type and type *heterocampoides*. *Exp.* 38 millim.

Sect. V. (*Synvaleria*). Antennæ in both sexes almost simple.

A. Fore wing with the terminal area white ..... *sauberi.*
B. Fore wing with the terminal area not white.
a. Fore wing with large white tooth in subterminal line running inwards below vein 3 ..... *jaspidea.*
b. Fore wing without white tooth in subterminal line..... *pardaria.*

*2525. Valeria sauberi. (Plate CIV. fig. 20.)

Valeria sauberi, Græs. Berl. ent. Zeit. 1892, p. 223; Staud. Cat. Lep. pal. p. 168.

♀. Head and thorax white; sides of palpi and frons black; a black bar above frons; vertex of head with some black hair; tegulæ with black stripe at middle; patagia edged with black; vertex of thorax mostly black; tibiæ and tarsi banded with black; abdomen black-brown mixed with some whitish. Fore wing white with a slight olive tinge, the basal area slightly irrorated with black, the medial area almost wholly suffused and irrorated with black; subbasal line represented by strong black striæ from costa and cell; antemedial line strong, black, connected with the subbasal line at costa, oblique and sinuous to submedian fold, angled inwards on vein 1, excurved and with black lunule before it above inner margin; claviform very large, whitish strongly defined by black except at base, extending to median nervure; orbicular and reniform large, whitish defined by black, the former round, the latter slightly angled inwards on median nervure; postmedial line strong, black, arising from below costa, slightly incurved at discal fold, then minutely dentate, slightly angled outwards at vein 4, then oblique, incurved in submedian interspace where there is a short oblique black streak from just beyond it to above tornus; the postmedial area with blackish patch on costal area with two white points on costa; subterminal line absent; a terminal series of small black lunules; cilia with series of black lunules at tips. Hind wing blackish brown; cilia white slightly chequered with brown; the underside grey-white suffused in parts with brown, a diffused oblique antemedial line, a discoidal spot, a diffused slightly sinuous postmedial line curved inwards to costa, a diffused subterminal band on costal area, and some small spots and striæ on termen.

Hab. E. Siberia, Amurland, Pokrofka, type † ♀ in Coll. Püngeler. *Exp.* 38 millim.

2526. Valeria jaspidea.

Noctua jaspidea, Vill. Linn. Ent. ii. p. 284, pl. 5. f. 28 (1789); Donz. Ann. Soc. Ent. Fr. x. p. 211, pl. 4. f. 1; Dup. Lép. Fr., Suppl. iv. p. 90, pl. 58. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 426; Staud. Cat. Lep. pal. p. 168.

Head and thorax red-brown mixed with blackish, grey, and greenish scales; tarsi ringed with white; abdomen red-brown mixed with greyish. Fore wing red-brown mixed with greyish and irrorated with black scales, the veins streaked with sap-green

and black scales; subbasal line double, black filled in with grey, waved, from costa to vein 1; antemedial line double filled in with greenish, waved, angled inwards in cell and on vein 1; claviform slight, faintly defined by a few dark scales; orbicular and reniform with red-brown centres and whitish annuli defined by black, the former somewhat elliptical, the latter with slight pale lunule in centre; a waved black medial line; postmedial line double filled in with grey, strongly bent outwards below costa, then somewhat dentate, angled outwards at vein 6 and incurved below vein 4, some white points beyond it on costa; subterminal line whitish, defined on inner side by blackish, waved, forming a slight tooth inwards below vein 4 and a strong white tooth below vein 3, the area beyond it sap-green; a terminal series of small

Fig. 116.—*Valeria jaspidea*, ♂. ½.

black lunules; cilia red-brown with ochreous-white points at base and waved line through them. Hind wing ochreous white; a slightly sinuous brown postmedial line; the terminal area suffused with red-brown; a whitish subterminal line, almost obsolete except towards tornus and with blackish point beyond it at extremity of vein 2; cilia brown with fine pale waved line at base and pale tips; the underside whitish irrorated with brown, a black discoidal lunule with brown mark from it to costa, postmedial line strong, rather punctiform, angled outwards at discal fold, then oblique, the apical area suffused with brown, a terminal series of small black lunules.

Hab. France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Switzerland; Spain, Bilbao, Andalusia. *Exp.* 46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 220; Hffm. Raup. p. 95, pl. 27. f. 4. Pale brown; 1st somite orange in front followed by a series of dark dots, thoracic somites with dark striæ; abdominal somites marbled with brown, the warts rufous and dark brown, a diffused whitish lateral stripe. Food-plant, Sloe.

2527. Valeria pardaria. (Plate CIV. fig. 21.)

Luperina pardaria, Moore, Lep. Atk. p. 114, pl. iv. f. 12 (1882); Hmpsn. Moths Ind. ii. p. 220.
Luperina olivascens, Moore, Lep. Atk. p. 114 (1882).

♀. Head and thorax olive-yellow (? faded from green); palpi

and edges of patagia red-brown, the scales edged with white, legs and abdomen red-brown and greyish. Fore wing olive-yellow (? faded from green), slightly irrorated with red-brown and the veins defined by rufous; subbasal line represented by double dark striæ from costa, cell, and vein 1; antemedial line double, interrupted at the veins, angled outwards below costa; claviform moderate, red-brown defined by blackish; orbicular and reniform with some rufous in centres and defined by black, open above and below, the former oblique elliptical; a waved medial line oblique from costa to below cell; postmedial line double, bent outwards below costa, then somewhat dentate, incurved at discal fold and below vein 4, some pale points beyond it on costa with short dark streaks between them; subterminal line pale defined by somewhat dentate red-brown marks before it and dark marks beyond it, angled outwards at vein 7 and dentate at veins 4, 3; a prominent terminal lunulate black line. Hind wing dark reddish brown; cilia greyish with a brown line through them; the underside greyish suffused and irrorated with brown, a large dark discoidal lunule and curved somewhat waved postmedial line.

Hab. Sikhim (*Russell*), 1 ♀ type *olivascens*. *Exp.* 38 millim.

Genus **XYLINISSA**, nov.

Type, *X. cossoides*.

Proboscis fully developed; palpi upturned to about vertex of head, fringed with hair in front, the 3rd joint moderate; frons smooth, rounded; eyes large; antennæ of male bipectinate with short branches on upper side, serrate on lower, the apical part ciliated; head and thorax clothed chiefly with scales, the pro- and metathorax with spreading crests; abdomen with dorsal crests on basal segments. Fore wing rather narrow, the apex somewhat produced and the termen oblique from middle to tornus; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below angle of discocellulars; 6, 7 rather shortly stalked; 8 anastomosing with the cell near base only.

A. Fore wing without fuscous striæ.
  a. Fore wing with the basal and medial costal areas not suffused with white ..... *lignitis*.
  b. Fore wing with the basal and medial costal areas suffused with white ..... *onirot*.
B. Fore wing with prominent fuscous striæ .... *cossoides*.

*2528. **Xylinissa lignitis**. (Plate CIV. fig. 22.)

Xylinissa lignitis, Schaus, Pr. U.S. Nat. Mus. xxx. p. 97 (1906).

♂. Head, thorax, and abdomen brown mixed with grey. Fore wing purplish grey suffused with reddish brown especially in and beyond end of cell; a slight sinuous black streak below base of cell; traces of a waved antemedial line; orbicular and reniform grey defined by black, the former oblique elliptical, conjoined to a similar round spot below the cell; postmedial line hardly defined except by the rufous area beyond the cell, bent outwards below costa and

incurved below vein 4, the veins beyond it slightly streaked with black; subterminal line very indistinct, defined by small dentate brown marks before it below costa, at discal fold, and below vein 2, where it becomes whitish and rather more distinct; a terminal series of small black lunules. Hind wing white, the veins and a terminal line brown; the inner margin tinged with brown; the underside irrorated with rufous especially on costal area, a post-medial series of short streaks on the veins.

Hab. Colombia, Bogota, type † ♂ in Coll. Schaus. *Exp.* 32 millim.

*2529. Xylinissa oniroe. (Plate CIV. fig. 23.)

Asphalia oniroe, Dogn. Le Nat. 1891, p. 126; id. Lép. Loja, p. 96, pl. 10. f. 10.

♂. Head and thorax fuscous brown mixed with grey; tegulæ with slight dark medial line; pectus and legs whitish, the tarsi banded with black; abdomen grey suffused with brown, the dorsal crest on 3rd segment blackish. Fore wing grey suffused with fuscous brown, some white suffusion on basal costal area and medial area down to submedian fold; a fine black streak in base of submedian fold; subbasal line represented by a slight oblique striga from costa; antemedial line represented by oblique black striæ from costa and in cell, very indistinct, double and somewhat dentate below the cell; orbicular with grey centre and white annulus defined by black, somewhat elliptical; reniform whitish, ill-defined except on inner side where it is defined by black and angled inwards on median nervure; a rather diffused oblique black medial line from costa to reniform; postmedial line represented by double oblique black striæ from costa, then represented by short black streaks on the veins, strongly bent outwards below costa, excurved to vein 4, then oblique; subterminal line near termen, whitish, very indistinct except towards inner margin, slightly defined by fuscous on outer side towards costa and with black marks before it below veins 4 and 3, excurved to vein 4, then incurved; a fine waved black terminal line; cilia brownish and grey. Hind wing pure white, semihyaline; the veins faintly tinged with brown; slight black marks on termen at veins 2 and 1; the underside white, the costal area irrorated with a few black scales, a post-medial series of slight black points on the veins, and some striæ on apical half of termen.

Hab. Ecuador, Loja, type † ♂ in Coll. Dognin. *Exp.* 40 millim.

2530. Xylinissa cossoides.

Xylina cossoides, Butl. Trans. Ent. Soc. 1882, p. 136.

Head and thorax pale grey slightly tinged with brown; tegulæ with black medial line and black tips, patagia with some black scales near upper edge; tarsi black ringed with grey; abdomen grey irrorated with brown. Fore wing grey tinged with brown and striated with fuscous; a black streak below the cell confluent with the lower edge of claviform which curves round and joins the outer edge of the

rather oblique quadrate orbicular, which is open above and below: an oblique black striga in cell before the antemedial line which is indistinct, oblique from costa to submedian fold, then angled inwards on vein 1; reniform defined by black, large, and extending well below the cell; postmedial line oblique from costa to vein 6, then inwardly oblique and dentate; the veins of terminal area streaked

Fig. 117.—*Xylinissa cossoides* ♂. ¼.

with black; a subterminal series of whitish striæ with black striæ on their outer side; a slight oblique shade from apex to angle of postmedial line. Hind wing semihyaline white, the veins of terminal area streaked with black; a slight terminal line from apex to vein 2; in female the costal and terminal areas suffused with brown; the underside with the costal area and termen irrorated with brown, a slight discoidal point and curved postmedial series of short streaks on the veins.

Hab. Chili (*Edmonds*), 1 ♂, 1 ♀ type. *Exp.* 32 millim.

Genus **ANTITYPE.**

	Type.
Antitype, Hübn. Verz. p. 212 (1827)	*chi.*
Polia, Hübn. Tent. ined. (nec Treit.)	*flavicincta.*

Proboscis fully developed; palpi obliquely upturned, short, the 2nd joint thickly clothed with hair in front; frons smooth, rounded, eyes large; antennæ of male typically ciliated; thorax clothed chiefly with scales, or with hair and hair-like scales, the pro- and metathorax with spreading crests; pectus clothed with long hair; tibiæ fringed with hair; abdomen with dorsal crests on basal segments. Fore wing with the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

Sect. I. Antennæ of male bipectinate with short branches, the apical part serrate.

A. Fore wing with the ground-colour fuscous black..... *serpentina.*
B. Fore wing with the ground-colour ochreous tinged with orange..... *rebecca.*

2531. Antitype serpentina.

Miselia serpentina, Treit. Eur. Schmett. v. 1, p. 399 (1825); Frr. Neue Beitr. iii. pl. 220; Dup. Lép. Fr. Suppl. iii. p. 288. pl. 26. f. 5; Herr.-Schäff. Eur. Schmett., Noct. ff. 72, 73; Staud. Cat. Lep. pal. p. 179.

♂. Head and thorax black-brown irrorated with white and with a slight greenish tinge, the tufts on basal joint of antennæ, vertex

of head, and prothorax slightly tipped with white: tarsi ringed with white; abdomen grey, dorsally suffused with fuscous, ventrally mixed with brown. Fore wing fuscous with a greenish or purplish gloss, slightly irrorated with white and with faint brownish streaks in discal and submedian folds and on inner margin; subbasal line represented by double striæ from costa and cell; antemedial line double, waved; claviform small, incompletely defined by black; orbicular round, defined by black, sometimes open above and below and with some white scales representing the annulus; reniform with white lunule at centre defined by black and white annulus more or less broken up into small spots and slightly defined by black; a dentate medial line, oblique below the cell; postmedial line double, bent outwards below costa, then dentate and produced to white points on the veins, strongly incurved below

Fig. 118.—*Antitype serpentina*, ♂. ½.

vein 4; a minutely waved whitish subterminal line defined by small dentate black marks on inner side, angled outwards at vein 7, excurved at middle and incurved in submedian interspace; a terminal series of small black lunules; cilia intersected with white. Hind wing pure white, with slightly waved terminal dark line from apex to vein 1; the underside with the costal area irrorated with fuscous, a discoidal point.

♀. Hind wing with the terminal area suffused with fuscous above and irrorated below, traces of a curved postmedial line with short dark streaks on the veins.

Hab. Austria, Carniola; Italy, Capri (*C. S. Browne*); Dalmatia, Zeller, Frey, and Leech Colls.; Corcyra; Greece; Asia Minor, Pontus; Syria. *Exp.* 40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 223.

Flesh-coloured with a dark brown stripe on back and brown lateral line, ventral surface yellowish. Food-plant, Chickweed. 4–5.

*2532. Antitype rebecca. (Plate CIV. fig. 24.)

Polia rebecca, Staud. Iris, iv. p. 282 (1891); id. Cat. Lep. pal. p. 179.

♂. Head and thorax yellow slightly tinged with rufous and mixed with some fuscous; sides of palpi and frons blackish; tarsi ringed with black; abdomen pale yellowish slightly irrorated with brown. Fore wing pale yellow tinged with orange especially in

submedian interspace and slighty irrorated with fuscous, strongly on medial area; subbasal line slight, dark, minutely waved, from costa to submedian fold, defined by pale yellow on outer side, beyond which is a patch of fuscous irroration on costa; antemedial line dark, oblique, irregularly waved, angled inwards in vein 1, defined by pale yellow on inner side; orbicular and reniform pale yellow, ill-defined, the former small, round, with fuscous spot in centre; traces of an irregular dark medial line; postmedial line dark, bent outwards and interrupted below costa, then dentate, excurved to vein 4, then incurved; subterminal line hardly traceable, formed by slight patches of dark scales and with slight dark irroration before it at costa, somewhat angled outwards at vein 7 and excurved at middle; a subterminal series of black striæ with slight patches of dark scales before them from apex to vein 4; cilia with a few dark scales. Hind wing yellowish white with very slight dark irroration; a rather diffused dark postmedial line from vein 6 to inner margin; the underside white with slight dark discoidal lunule, the diffused postmedial line incurved to costa.

♀. Thorax and fore wing rather more orange; hind wing wholly suffused with brown and with indistinct diffused subterminal band.

Hab. Palestine, Jerusalem, in Coll. Püngeler. *Exp.* 38 millim.

Sect. II. Antennæ of male more or less strongly serrate and fasciculate.

A. Fore wing with small whitish marks on subterminal line.
  a. Hind wing with obsolescent postmedial and subterminal lines ..... *polymita*.
  b. Hind wing without postmedial and subterminal lines. *manisadjiani*.
B. Fore wing with small yellow marks on subterminal line.
  a. Thorax clothed chiefly with scales; wings tinged with brown ..... *flavicincta*.
  b. Thorax clothed with hair and hair-like scales; wings tinged with blue-grey ..... *rufocincta*.
C. Fore wing without white or yellow marks on subterminal line.
  a. Fore wing with the ground-colour yellow.
    a^1. Hind wing of male white.
      a^2. Fore wing with the medial line angled outwards below costa; hind wing of female wholly fuscous ..... *argillaceago*.
      b^2. Fore wing with the medial line oblique from costa to median nervure; hind wing of female with the costal area white ..... *subvenusta*.
    b^1. Hind wing of male white with diffused postmedial and subterminal fuscous bands ..... *miltina*.
    c^1. Hind wing of male pale fuscous-brown ..... *calamistis*.
  b. Fore wing with the ground-colour white.
    a^1. Fore wing with the medial area suffused with fuscous.
      a^2. Fore wing yellowish white ..... *dubia*.
      b^2. Fore wing greyish white ..... *opora*.
    b^1. Fore wing with the medial area not suffused with fuscous ..... *canescens*.

2533. Antitype polymita.

Noctua polymita, Linn. Faun. Suec. p. 321 (1761); Esp. Schmett. iv. pl. 170. f. 4; Frr. Neue Beitr. iii. pl. 261; Dup. Lép. Fr. vi. p. 417, pl. 99. f. 1; Staud. Cat. Lep. pal. p. 179.
Noctua ridens, Hübn. Eur. Schmett., Noct. f. 20 (1827).

♂. Head and thorax olive-green mixed with whitish; tegulæ with slight dark medial line; patagia edged with white in front and above; crests on pro- and metathorax tipped with white; tibiæ and tarsi ringed with white; abdomen grey suffused with olive-green. Fore wing olive-green irrorated with white; a small white-tipped tuft of scales at base; subbasal line double filled in with white, angled inwards in cell and ending at submedian fold; antemedial line defined by white on inner side, oblique, waved, angled outwards below costa and above inner margin; claviform defined by black below and at extremity; orbicular and reniform with incomplete

Fig. 119.—*Antitype polymita*, ♂. ½.

white annuli defined by black, the former round, the latter with some white in centre and irregular outline; a dentate medial line angled outward on median nervure, then oblique; postmedial line defined by white on outer side, bent outwards below costa, then dentate and produced to black points on the veins, incurved below vein 4, some white points beyond it on costa; subterminal line dentate, white defined by small dentate black marks on inner side, slightly angled outwards at vein 7, excurved at middle and incurved in submedian interspace; a terminal series of small black lunules; cilia chequered yellowish white and blackish. Hind wing white; the veins tinged with fuscous; a diffused brownish subterminal band, somewhat dentate at middle; a waved black terminal line; cilia tinged with brown from apex to vein 2; the underside with the costal area irrorated with brown, a small discoidal lunule, a slight postmedial line from costa to vein 6.

♀. Hind wing wholly tinged with brown, the underside irrorated with brown, a curved postmedial line.

Hab. France, Leech Coll.; Germany, Zeller Coll.; Austria, Frey Coll.; Hungary, Zeller and Leech Colls.; Sicily; Dalmatia, Leech Coll.; Scandinavia, Norway, Frey Coll.; Balkan States; S.W. Russia. *Exp.* 40–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 223.

Dull rose-colour; dorsal and subdorsal lines white; a diffused

reddish-brown lateral stripe; ventral surface pale yellow. Food-plants, *Primula*, &c. 4–5.

2534. Antitype manisadjiani. (Plate CIV. fig. 25.)

Polia manisadjiani, Staud. Hor. Ent. Soc. Ross. xvi. p. 73 (1881); id. Cat. Lep. pal. p. 179.

♂. Head and thorax grey mixed with black and slightly with olive-yellow; fore tarsi banded black and white; abdomen white slightly tinged with ochreous and irrorated with brown; diffused dorsal fuscous bands. Fore wing white irrorated with fuscous; the basal area suffused with blackish, its outer edge oblique, waved, with some yellow scales on it; the subbasal line represented by two black striæ from costa; the medial area fuscous black with obscure yellowish streaks in discal and submedian folds; antemedial line obscurely double, the inner line almost obsolete, oblique, minutely dentate; claviform defined by black; orbicular and reniform defined by black, the former round, the latter with more or less developed white points on its outer edge and with rather irregular outline; post-medial line defined by white on outer side, bent outwards below costa, then dentate and produced to points on the veins, incurved below vein 4, some fuscous suffusion beyond it on costa with white points on it; subterminal line indistinct, white, defined on inner side by minute dentate black and yellowish marks, dentate at veins 7, 6, 4, 3, some fuscous suffusion beyond it at discal and submedian folds; a terminal series of small black lunules; cilia yellowish white and fuscous with blackish line through them. Hind wing white, the terminal area irrorated with fuscous; a fine brown terminal line; cilia white, with blackish line through them from apex to vein 2; the underside with the costal area irrorated with fuscous, a black discoidal point.

Hab. Asia Minor, Pontus, 2 ♂. *Exp.* 38–42 millim.

2535. Antitype flavicincta.

Noctua flavicincta, Schiff. Wien. Verz. p. 72 (1776); Fab. Mant. Ins. ii. p. 178 (1787); Hübn. Eur. Schmett., Noct. f. 46; Dup. Lép. Fr. vi. p. 401, pl. 98. f. 1; Steph. Ill. Brit. Ent., Haust. iii. p. 32; Staud. Cat. Lep. pal. p. 179.
Noctua flavicincta-major, Esp. Schmett. iv. pl. 153. ff. 1-3 (1790).
Noctua dysodea, Esp. Schmett. iv. pl. 153. ff. 4-6 (1790), nec Schiff.
Polia meridionalis, Boisd. Ind. Meth. p. 127 (1840).
Polia calvescens, Boisd. Ind. Meth. p. 127 (1840).

Head and thorax grey mixed with fuscous, often with some yellowish scales; tarsi banded black and white; abdomen grey tinged with ochreous and irrorated with fuscous, thickly on dorsum. Fore wing grey-white thickly irrorated with fuscous, and with more or less prominent orange streaks in submedian fold and above inner margin; subbasal line double filled in with white, waved, from costa to submedian fold; antemedial line defined by whitish on inner

side, rather oblique, waved; claviform represented by a slight diffused fuscous mark; orbicular and reniform large with whitish annuli defined by fuscous, the former round with more or less orange at sides, the latter rather irregular with more or less orange at sides and below; traces of a diffused waved medial line; postmedial line defined by whitish on outer side, bent outwards below costa, then dentate, incurved between veins 4 and 1; some white points beyond it on costa; subterminal line represented by a series of somewhat dentate blackish marks on rather elongate orange spots, angled outwards at vein 7 and inwards in submedian fold; a terminal series of slight black lunules; cilia yellowish white with series of dark lunules. Hind wing white irrorated with fuscous; an indistinct curved slightly waved postmedial line and diffused subterminal band; a fine waved black terminal line; in female suffused with fuscous leaving some whitish beyond the postmedial line and on termen; the underside paler and tinged with yellowish, a small black discoidal lunule.

Ab. 1. *meridionalis*. Much darker.—Spain, Corsica.

Ab. 2. *calvescens*. Much paler grey-white with hardly a trace of the yellow markings.—S. France; Italy; Sicily.

Hab. Britain, Leech Coll.; France, Sand and Leech Colls.; Germany, Zeller Coll.; Austria; Hungary, Leech Coll.; Switzerland, Frey and Leech Colls.; Spain, Castile, Andalusia, Leech Coll.; Corsica, Leech Coll.; Italy; Sicily; S. Sweden; Asia Minor, Smyrna (*Lederer*), 2 ♂, 1 ♀. *Exp.* 42–52 millim.

Larva. Meyr. Brit. Lep. p. 54; Barrett, Lep. Brit. iv. p. 297, pl. 169.

Pale green; dorsal line darker; spiracular line white, sometimes black-edged above. Food-plants: Birch, *Rumex*, *Stellaria*, &c. 5–7.

2536. Antitype rufocincta.

Noctua rufocincta, Hübn. Eur. Schmett., Noct, ff. 747–8 (1827); Dup. Lép. Fr., Suppl. iii. p. 259, pl. 24. f. 3; Herr.-Schäff. Eur. Schmett., Noct. ff. 37, 483; Mill. Icones, ii. pl. 80. ff. 3–5; Staud. Cat. Lep. pal. p. 179.
Noctua farinosa, Frr. Neue Beitr. vi. pl. 509. f. 3 (1852).
Polia mucida, Guen. Noct. ii. p. 41 (1852).

Head and thorax white more or less strongly mixed with fuscous, the metathorax sometimes with some yellowish hair; tibiæ fuscous ringed with white; abdomen white irrorated with fuscous. Fore wing bluish white, more or less thickly irrorated with fuscous, the medial area slightly darker; subbasal line double, waved, filled in with white, from costa to submedian fold where there is an orange streak below it; antemedial line double, the inner line indistinct, filled in with white, oblique, waved, angled inwards on the veins; claviform short, slightly defined by blackish, some orange beyond it before the postmedial line; orbicular and reniform with whitish annuli defined by fuscous and some orange at sides, the former rather quadrate and open above and below, the latter open above and below; a waved medial line; postmedial line bent outwards below costa, then dentate and produced to black and white points on the veins,

incurved below vein 4; some white points beyond it on costa; subterminal line represented by a series of orange spots with slight dentate fuscous marks before them and short streaks beyond them; angled outwards at vein 7 and excurved at middle; cilia chequered yellowish white and fuscous. Hind wing white slightly irrorated with fuscous, the veins brownish; a slight medial line, obsolete towards costa and incurved below vein 4; a diffused subterminal band; a fine dark terminal line and line through the cilia; in female more uniformly suffused with fuscous; the underside whiter, a slight black streak in base of cell, a discoidal spot, the postmedial line more distinct and slightly waved at middle.

Ab. 1. *mucida*. Paler; fore wing with hardly a trace of the orange markings.

Hab. France, Sand Coll.; Switzerland, Zeller and Frey Colls.; Austria; Hungary; Italy, Capri (*E. S. Browne*); Sicily; Dalmatia, Leech Coll.; Greece, Leech Coll.; Balkan States; Rhodes; Asia Minor, Pontus; Syria. *Exp.* 48–52 millim.

Larva. Kirby, Butt. & Moths Eur. p. 224.

Green, with dark dorsal and yellow lateral lines; head brownish. Food-plants: *Asplenium ruta-muraria*, flowers of *Silene nutans*, and Hawkweed. 5–6.

2537. Antitype argillaceago.

Noctua argillaceago, Hübn. Eur. Schmett., Noct. ff. 682–3 (1827); Mill. Icones, i. p. 297, pl. 35. ff. 6–8.

Polia venusta, Boisd. Ind. Meth. p. 127 (1840); Dup. Lép. Fr. Suppl. iii. p. 234, pl. 26. f. 3; Herr.-Schäff. Eur. Schmett., Noct. ff. 58, 59; Staud. Cat. Lep. pal. p. 179.

♂. Head and thorax white suffused with orange-yellow; palpi with some black hair at sides; frons with black spots at sides; thorax sparsely irrorated with black; tarsi with fuscous bands; abdomen yellow irrorated with fuscous on dorsum. Fore wing yellow irrorated with black, the ante- and postmedial areas tinged with fulvous, the medial area more or less suffused with black; subbasal line represented by two dark striæ from costa; antemedial line rather indistinct, double, oblique, waved; claviform almost obsolete with slight yellowish mark beyond its extremity; orbicular and reniform with indistinctly defined yellow annuli, the former rather elliptical, the latter irregular with yellow points on its outer edge and slightly angled inwards on median nervure; traces of a waved medial line; postmedial line double at costa, bent outwards below costa, then dentate and produced to black and white points on the veins, incurved below vein 4, some pale points beyond it on costa; subterminal line indistinct, pale defined by faint dentate fuscous marks on inner side, angled outwards at veins 7, 6, 4, 3, 2, the area beyond it slightly browner; cilia chequered yellow and brownish. Hind wing white, sometimes with slight brownish subterminal spots towards tornus.

♀. Hind wing suffused with fuscous, the cilia yellowish white; the underside white, with diffused fuscous postmedial line and fuscous suffusion on inner area.

Hab. S. France, Zeller, Frey, and Leech Colls.; Spain, Andalusia; S. Russia, Leech Coll.; Palestine, Jerusalem, in Coll. Püngeler. *Exp.* 42 millim.

Larva. Kirby, Butt. & Moths Eur. p. 224.

Green; dorsal line slight, some black points on dorsal area: subdorsal line pale edged with yellow above, a lateral series of oblique stripes; lateral line pale. Food-plants: *Cistus*, Ilex, Thyme, and *Genista scorpius*.

*2538. Antitype subvenusta. (Plate CIV. fig. 26.)

Antitype subvenusta, Püng. Iris, xix. p. 94 (1906).

♂. Head and thorax flesh-pink mixed with whitish and a few black scales; palpi and frons fuscous at sides; pectus white, the tibiæ and tarsi fuscous ringed with white; abdomen white. Fore wing flesh-pink irrorated with pale brown, fuscous, and white, the veins strongly irrorated with fuscous and white; an indistinct oblique waved fuscous and white antemedial line angled inwards to white points on the veins; orbicular and reniform faintly defined by brown, both rather rectangular and the latter constricted at middle: a diffused fuscous medial line oblique from costa to median nervure, then incurved; postmedial line fuscous and white, bent outwards below costa, then dentate and produced to a double series of dark points on the veins with white points between them, incurved below vein 4, some slight dark marks on costa beyond it: subterminal line indistinct, waved, the area beyond it slightly tinged with fuscous; cilia with a waved fuscous line near tips. Hind wing white with faint traces of a diffused subterminal line; a fine dark terminal line.

♀. Abdomen irrorated with fuscous; hind wing wholly suffused with fuscous except costal area; an indistinct curved whitish postmedial line; cilia white; the underside with short dark streak in cell, small discoidal lunule, diffused minutely crenulate postmedial line and diffused terminal band.

Hab. Palestine, Jerusalem, type † ♂ ♀ in Coll. Püngeler. *Exp.* 44 millim.

*2539. Antitype miltina. (Plate CIV. fig. 27.)

Polia miltina, Püng. Iris, xv. p. 152, pl. 5. f. 23 (1902).

♂. Head and thorax fulvous; sides of palpi and frons blackish; antennæ blackish; pectus and legs pale yellowish with some grey; tarsi banded with black; abdomen yellowish white, suffused with fuscous on dorsum and sides. Fore wing fulvous irrorated with black especially on postmedial area and with diffused black patch on medial area above inner margin; subbasal line indistinct, pale yellow with some black scales before it at costa, waved, from costa to submedian fold; antemedial line pale yellow, defined by black scales on outer side, oblique, waved; claviform moderate, defined

by black; orbicular and reniform with fulvous centres and pale yellow annuli defined by a few black scales, the former round, the latter rather constricted at middle and angled inwards on median nervure; postmedial line black, defined by pale yellow on outer side, bent outwards below costa, then dentate, excurved to vein 4, then incurved and bent outwards again to inner margin, some pale yellow points beyond it on costa; subterminal line indistinct, pale, waved, defined on inner side by slight diffused blackish marks, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of slight black striæ; cilia yellow tinged with fulvous with a few dark scales. Hind wing white; some dark suffusion along median nervure; a diffused dark postmedial line incurved in submedian interspace; a diffused dark subterminal band incurved at vein 2, and diffused terminal band from apex to vein 2; the underside white with slight dark irroration, a diffused postmedial line curved inwards to costa.

Ab. 1. Head and thorax largely mixed with black; fore wing much more irrorated and suffused with black, the whole medial area suffused with black, the pale edges to lines and the fulvous stigmata prominent; hind wing more suffused with black.

Hab. W. Turkestan, Ferghana, Togus-tarau, type † ♂ in Coll. Püngeler, Alexander Mts. *Exp.* 40 millim.

2540. **Antitype calamistis**, n. sp. (Plate CIV. fig. 28.)

♂. Head, thorax, and abdomen pale ochreous with a few fuscous scales; sides of palpi and frons fuscous; antennæ fuscous; patagia with indistinct black line near upper edge; tarsi black, ringed with ochreous. Fore wing pale silky ochreous tinged in parts with fuscous and sparsely irrorated with black; subbasal line represented by black striæ from costa and cell, with some black scales beyond its lower extremity; antemedial line ill-defined, rather oblique, waved; claviform small, indistinctly defined by black: orbicular and reniform large, pale, indistinctly defined, the former round, the latter somewhat angled inwards on median nervure and with some pale points on its edges; traces of a medial line oblique from costa to median nervure, then slightly waved, the area beyond it tinged with fuscous; postmedial line bent outwards below costa, then dentate, excurved to vein 4, then incurved; a subterminal series of slight pale points, defined on inner side by small dentate black marks except towards costa, those above and below vein 5 more prominent; a terminal series of small black lunules. Hind wing ochreous suffused with fuscous; cilia ochreous with a fuscous line through them; the underside ochreous irrorated with fuscous, a discoidal lunule, a waved postmedial line bent inwards to costa and incurved below vein 4, a terminal series of small lunules.

Hab. Kashmir, Dras (*Leech*), 1 ♂ type. *Exp.* 48 millim.

2541. Antitype dubia.

Polia dubia, Dup. Lép. Fr. Suppl. iii. p. 286, pl. 26. f. 4 (1836); Staud. Cat. Lep. pal. p. 179.
Polia cærulescens, Boisd. Ind. Meth. p. 127 (1840); Dup. Lép. Fr. Suppl. iv. p. 95, pl. 78. f. 5; Freyer, Neue Beitr. v. pl. 411. f. 4; Herr.-Schäff. Eur. Schmett., Noct. ff. 38, 39, 402; Mill. Icones, i. p. 335, pl. 40, ff. 5–7.
Polia typhonia, Mill. Ann. Soc. Linn. Lyons, 1882. p. 178, pl. 4. ff. 10–11.
Polia rondoui, Stertz, Iris, xv. p. 180, pl. vi. f. 25 (1902).

♂. Head and thorax white slightly irrorated with fuscous; palpi blackish at sides except 3rd joint; fore tarsi banded with fuscous; abdomen white slightly tinged with brown. Fore wing ochreous white thickly irrorated with brown, the basal costal area and medial area irrorated with bluish fuscous and rather darker; subbasal line represented by double black striæ from costa; antemedial line indistinct, defined by white on inner side, oblique, waved, with two blackish points at costa; claviform almost obsolete with whitish mark beyond its extremity; orbicular and reniform with ill-defined whitish annuli, the former round, the latter irregular with whitish points on its outer edge and slightly angled inwards on median nervure; traces of a waved medial line; postmedial line with dark point with white spot beyond it at costa, bent outwards below costa, then dentate and produced to white points on the veins, incurved below vein 4, some white points beyond it on costa; subterminal line represented by a series of very indistinct pale lunules with slight dentate dark marks on their inner sides, angled outwards on vein 7; a terminal series of black points; cilia chequered whitish and fuscous. Hind wing white, the veins and medial part of terminal area suffused with fuscous; an indistinct oblique minutely waved postmedial line; the underside more uniform white, with small discoidal spot.

♀. Much darker and greyer; hind wing fuscous, the postmedial line faintly defined by whitish on outer side.

Ab. 1. *typhonia*. Fore wing leaden-grey.

Ab. 2. *rondoui*. Fore wing steel-blue.—Pyrenees.

Hab. S. France, Ardèche, Zeller and Frey Colls., Pyrenees; Spain, 1 ♀; Corsica, Leech Coll.; Italy, Leech Coll. *Exp.* 40–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 224.

Stout, pinkish with faint darker mottling and yellow lateral stripe. Food-plants: *Cistus*, Box, Henbane, &c. 12–1.

2542. Antitype apora. (Plate CIV. fig. 29.)

Polia apora, Staud. Iris, x. p. 280 (1897); id. Cat. Lep. pal. p. 179.

♂. Head and thorax white slightly mixed with fuscous; sides of palpi and frons with dark patches; tarsi with fuscous bands; abdomen white dorsally suffused with yellow-brown. Fore wing greyish white slightly irrorated with fuscous, the medial area suffused with fuscous; subbasal line double, waved, from costa to

vein 1; antemedial line double, the inner line indistinct, oblique, waved, angled inwards on vein 1; claviform obsolete; orbicular and reniform white incompletely defined by brown, large and somewhat quadrate; an indistinct waved medial line; postmedial line fuscous, indistinct, bent outwards below costa, then dentate and produced to black and white points on the veins, incurved below vein 4, some white points beyond it on costa; subterminal line only defined by fuscous suffusion on inner side, angled outwards at vein 7, somewhat dentate at veins 4, 3, 2, and bent outwards to tornus; a terminal series of black points; cilia chequered whitish and pale fuscous. Hind wing pure white.

♀. Hind wing tinged with grey, the terminal area darker.

Hab. Syria, Beyrout; Palestine, 1 ♂. *Exp.* 38 millim.

2543. Antitype canescens.

Noctua canescens, Dup. Lép. Fr. vi. p. 422, pl. 99. f. 3 (1826); Boisd. Ann. Soc. Linn. Paris, 1827, p. 113, pl. 6. f. 3; Frr. Neue Beitr. vi. pl. 516. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 466; Mill. Icones, ii. pl. 98. ff. 5–8; Staud. Cat. Lep. pal. p. 180.

Noctua pumicosa, Geyer, Eur. Schmett., Noct. ff. 787–8 (1834); Dup. Lép. Fr., Suppl. iii. p. 282, pl. 26. f. 2.

Polia asphodeli, Rmbr. Ann. Soc. Ent. Fr. i. p. 281, pl. 9. f. 4 (1832); Dup. Lép. Fr., Suppl. iii. p. 264, pl. 24, ff. 5–6; Geyer, Eur. Schmett., Noct. ff. 844–5; Herr.-Schäff. Eur. Schmett., Noct. ff. 488–90.

♂. Head and thorax white thickly irrorated with fuscous, sides of palpi and frons blackish, a blackish bar above frons; tarsi banded with black; abdomen white irrorated with fuscous except at base. Fore wing white sometimes tinged with ochreous, thickly irrorated with fuscous; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line oblique, waved, angled inwards on vein 1; orbicular and reniform whitish, ill-defined, with traces of yellowish spots on their edges, the former rounded, the latter slightly angled inwards on median nervure; an indistinct diffused waved medial line; postmedial line bent outwards below costa, then dentate, very oblique below vein 4 and approximated to antemedial line at inner margin, some white points beyond it on costa; subterminal line represented by a series of slight whitish spots defined on inner side by dentate fuscous marks, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia pale with a fuscous line through them. Hind wing white, the veins sometimes tinged with fuscous at extremity.

♀. Hind wing suffused with fuscous leaving the basal area whitish.

Ab. 1. *asphodeli*. Darker and more thickly irrorated with fuscous.

Hab. France, Sand Coll.; Spain; Corsica, Leech Coll.; Italy; Dalmatia, Leech Coll.; Malta (*Mathew*); Rhodes; Asia Minor, Pontus, 1 ♀, Taurus; Syria. *Exp.* 38–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 224.

Pale green or reddish. Food-plants: Asphodel, flowers of *Narcissus*, &c. 5–6.

Sect. III. Antennæ of male ciliated, with slight tufts of scales at the joints.

A. Fore wing with small yellow marks on subterminal line.
  a. Fore wing greyish suffused with olive-brown ..... *illecebrosa.*
  b. Fore wing whitish suffused and irrorated with fuscous. *nigrocincta.*
B. Fore wing with small whitish marks on subterminal line.
  a. Fore wing without black streak between claviform and postmedial line.
    a^1. Fore wing with the medial area paler than the ante- and postmedial areas ..... *hostilis.*
    b^1. Fore wing with the medial area darker than the ante- and postmedial areas.
      a^2. Fore wing with the cilia yellow tinged with pink; hind wing fuscous..... *calchbergi.*
      b^2. Fore wing with the cilia white and fuscous; hind wing white.
        a^3. Fore wing with the basal and terminal areas thickly irrorated with black..... *jonis.*
        b^3. Fore wing with the basal and terminal areas slightly irrorated with fuscous ..... *suda.*
  b. Fore wing with black streak between claviform and postmedial line ..... *chi.*

*2544. Antitype illecebrosa. (Plate CIV. fig. 30.)

Antitype illecebrosa, Püng. Iris, xix. p. 93 (1906).

♀. Head and thorax dark brown mixed with grey; palpi with blackish streak at sides; frons and vertex of head with blackish bars; tegulæ with black line near tips; tarsi with whitish rings; abdomen dark brown mixed with grey. Fore wing grey suffused with dull olive-brown and slightly irrorated with black, the postmedial area greyer except towards costa; subbasal line double filled in with whitish, waved, from costa to submedian fold; an orange streak in base of submedian fold; antemedial line double filled in with whitish, oblique, waved; claviform moderate, grey with orange outline slightly defined by brown; orbicular and reniform greyish with incomplete orange annuli slightly defined by brown, the former elliptical, open above, the latter open above and below; postmedial line indistinctly double filled in with grey except from below costa to vein 4, bent outwards below costa, then dentate and produced to black and white points on the veins, incurved below vein 4, some white points beyond it on costa; subterminal line whitish with orange scales on it and slightly defined by brown on inner side, excurved below vein 7, angled inwards in discal fold, slightly dentate inwards below veins 4 and 3, then incurved, the area beyond it suffused with brown; a terminal series of small black lunules; cilia whitish, with series of blackish lunules and blackish tips. Hind wing uniform fuscous brown; the cilia pale brownish with slight brown line through them; the underside greyish suffused and thickly irrorated with brown, a slight discoidal lunule and traces of a curved postmedial line.

Hab. Tibet, Kuku-Noor, type † ♀ in Coll. Püngeler. *Exp.* 40 millim.

2545. Antitype nigrocincta.

Polia nigrocincta, Treit. Schmett. Eur. v. 2, p. 31 (1825), & x. 2, p. 59; Frr. Beitr. pl. 137. ff. 1–2; id. Neue Beitr. iii. pl. 243; Dup. Lép. Fr., Suppl. iii. p. 257, pl. 24. f. 4; Herr.-Schäff. Eur. Schmett., Noct. p. 482; Carrington, Ent. 1879, p. 161.

Noctua xanthomista, Hübn. Eur. Schmett., Noct. f. 647 (1827); Staud. Cat. Lep. pal. p. 179.

Polia nivescens, Staud. Cat. Lep. Eur. ed. i. p. 42 (1861).

♂. Head and thorax white and fuscous with a few yellowish scales; palpi with black bands on 2nd and 3rd joints; frons with black bar; tarsi banded black and white; abdomen white mixed with fuscous. Fore wing white thickly irrorated with black, the medial area and postmedial area down to vein 2 suffused with black; a slight yellow streak below base of cell; subbasal line indistinct, waved, from costa to submedian fold; antemedial line indistinct, double, waved, with some blackish suffusion before it on costal area; claviform small, indistinctly defined by black; orbicular and reniform large, whitish defined by black, and with slight yellow marks on their edges, the former rather quadrate, open above and below, the latter irregular; an indistinct waved medial line; postmedial line bent outwards below costa, then dentate and produced to white points on the veins, incurved below vein 4, some white points beyond it on costa; subterminal line black, diffused outwardly and with series of small yellow spots on its inner edge, angled outwards at vein 7 and slightly dentate at veins 4, 3, 2; a terminal series of small black lunules; cilia chequered white and fuscous. Hind wing white, the veins and termen tinged with black; the underside with the costal area irrorated with fuscous, a short dark streak in cell sometimes present, a small discoidal lunule and postmedial series of points.

♀. Hind wing wholly suffused with fuscous above, the cilia white.

Ab. 1. *xanthomista*. Thorax with some yellow on pro- and metathorax; fore wing paler and more olive in colour; the yellow markings much more developed especially in submedian fold and above inner margin, the subterminal line broken up into dentate marks.

Ab. 2. *nivescens*. Much whiter, the yellow markings moderately developed.

Hab. Britain, Leech Coll.; France, Sand and Leech Colls.; Germany, Zeller Coll.; Austria, Leech Coll.; Hungary, Frey and Leech Colls.; Switzerland, Zeller, Frey, and Leech Colls.; Spain, Castile; Italy; S. Russia, Leech Coll. *Exp.* 40–44 millim.

Larva. Meyr. Brit. Lep. p. 54; Barrett, Lep. Brit. iv. p. 300, pl. 168. f. 2.

Brownish ochreous, tinged with orange behind; dorsal and spiracular lines pale; head pale brown. Food-plants: *Silene*, *Statice*, *Plantago*, &c. 6–7.

*2546. Antitype hostilis. (Plate CIV. fig. 31.)

Antitype hostilis, Püng. Iris, xix. p. 92 (1906).

♀. Head and thorax grey-white mixed with fuscous brown; metathorax with two pairs of small blackish spots; tarsi blackish with pale rings; abdomen grey-white irrorated with fuscous, the terminal segment with paired lateral and sublateral blackish spots. Fore wing grey-white irrorated with fuscous, the antemedial area suffused with black, the postmedial area with fuscous and brown except towards inner margin, the medial area palest; subbasal line represented by black striæ from costa and cell; antemedial line bounding the dark area, with two black striæ from costa, then indistinct, slightly waved, interrupted, excurved in submedian interspace; claviform and orbicular absent; reniform faintly defined by fuscous and with fuscous striga in centre; an indistinct medial slightly waved line, oblique from costa to lower angle of cell, then approximated to the postmedial line which is very indistinct, slightly bent outwards below costa, then somewhat dentate, oblique below vein 4, some pale points beyond it on costa; subterminal line with fuscous shade before it at costa and with series of small dentate black marks on its inner side from vein 6 to submedian fold, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of slight black lunules; cilia whitish mixed with fuscous. Hind wing whitish slightly tinged with brown, the veins and terminal area suffused with brown, two slight dark marks towards extremity of vein 2; cilia white, tinged with brown at base except towards tornus; the underside white, the costal and terminal areas irrorated with pale brown.

Hab. W. Turkestan, Askabad, type † ♀ in Coll. Püngeler. *Exp.* 40 millim.

*2547. Antitype calchbergi.

Polia kalchbergi, Staud. Iris, x. p. 172. pl. 4. f. 10 (1897); id. Cat. Lep. pal. p. 180.

♂. Head, pectus, and legs pale grey; thorax dark grey; abdomen grey with darker irroration, the ventral surface yellowish. Fore wing pale ash-grey with darker irroration, the medial area suffused with fuscous; subbasal line represented by dark striæ from costa and cell; antemedial line double, oblique, waved; claviform obsolete; orbicular and reniform small, with dark centres and slight pale annuli defined by black, the former round; postmedial line bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line slightly defined by dark suffusion on inner side, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of dark points; cilia pinkish yellow with two series of dark points. Hind wing dark grey, the cilia pinkish yellow with series of dark points at base; the underside yellowish with dark postmedial line.

Hab. Syria, Haifa. *Exp.* 24–27 millim. This species is unknown to me.

2548. Antitype jonis. (Plate CIV. fig. 32.)

Polia jonis, Led. Ann. Soc. Ent. Belg. 1865, pp. 63, 78, pl. 3. f. 9; Staud. Cat. Lep. pal. p. 180.

♂. Head and thorax grey-white mixed with black; frons with blackish bar; tegulæ with blackish medial line; tarsi banded with black; abdomen white mixed with fuscous. Fore wing white thickly irrorated with black and slightly tinged with ochreous in places, the medial area darker; a double waved subbasal line from costa to submedian fold filled in with whitish; antemedial line oblique, waved, defined by whitish on outer side; claviform indistinctly defined by black and with slight streak in submedian fold from it to postmedial line; orbicular and reniform whitish defined by black, the former rounded, the latter rather irregular and with some fuscous in centre; an indistinct irregular medial line; postmedial line defined by whitish on outer side, bent outwards below costa, then dentate and produced to short streaks on the veins, below vein 4 strongly incurved to below end of cell, some white points beyond it on costa; subterminal line whitish defined by blackish on inner side, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of small black lunules; cilia fuscous with white points at base and tips. Hind wing white, with traces of fuscous postmedial points on the veins and diffused subterminal band; a slight waved terminal line.

Hab. Asia Minor, Lydia, 1 ♂. *Exp.* 40 millim.

2549. Antitype suda.

Noctua suda, Geyer, Eur. Schmett., Noct. f. 802 (1834); Dup. Lép. Fr. Suppl. iii. p. 255, pl. 24. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 480; Staud. Cat. Lep. pal. p. 180.
Polia amasina, Staud. Cat. Lep. pal. p. 180 (1901).

♂. Head and thorax grey-white mixed with fuscous; palpi and frons at side black; tegulæ with black medial line; tarsi banded with black; abdomen white mixed with fuscous. Fore wing yellowish white irrorated with fuscous, the veins and termen bluish white and fuscous; a double slightly waved subbasal line from costa to submedian fold; a double, minutely waved, curved antemedial line; the medial area more or less suffused with blackish; claviform large, defined by black; orbicular and reniform large, whitish defined by black, the former round, the latter rather irregular and with some fuscous in centre; an indistinct dentate medial line; postmedial line bent outwards below costa, then dentate, strongly incurved below vein 4 to below cell, some white points beyond it on costa; subterminal line yellowish white, defined on inner side by slight dentate fuscous marks and on outer side by some fuscous suffusion, angled outwards at vein 7 and inwards in submedian fold; a terminal series of small black lunules; cilia chequered fuscous and whitish. Hind wing white, with faint traces of diffused postmedial and subterminal dark lines; a fine dark terminal line except towards tornus.

♀. Hind wing with the postmedial line and diffused subterminal band well developed, the former sinuous; the underside irrorated with brown, a postmedial line excurved from costa to vein 3, then incurved.

Ab. 1. *amasina*. Fore wing darker, blue-grey marked with black and white.—Pontus.

Hab. Switzerland, Valais, Zeller, Frey, and Leech Colls., Jura; Asia Minor, Pontus. *Exp.* 34–40 millim.

2550. Antitype chi.

Noctua chi, Linn. Syst. Nat. x. p. 514 (1758); Esp. Schmett. iv. pl. 114. ff. 1–3; Hübn. Eur. Schmett., Noct. f. 49; Dup. Lép. Fr. vi. p. 422, pl. 99. f. 3; Steph. Ill. Brit. Ent., Haust. iii. p. 34; Staud. Cat. Lep. pal. p. 180.
Polia olivacea, Steph. Ill. Brit. Ent., Haust. iii. p. 325 (1829).
Polia subcærulea, Græs. Berl. ent. Zeit. 1888, p. 329.

♂. Head and thorax white mixed with fuscous; frons with lateral black bars; tegulæ with medial black line; tarsi banded with fuscous; abdomen white irrorated with black. Fore wing white irrorated with olive-grey or fuscous; a double waved subbasal line from costa to submedian fold; a double waved oblique antemedial line; claviform defined by black except above and with a black streak in submedian fold from it to postmedial line; orbicular and reniform defined by black, the former rounded or rather quadrate,

Fig. 120.—*Antitype chi*, ♂. ½.

the latter slightly angled inwards on median nervure; a waved medial line; postmedial line oblique from costa to vein 6, then dentate, incurved below vein 4 to below end of cell, with another more even line beyond it and some white points on costa; subterminal line white, defined on inner side by slight dentate fuscous marks and at middle by black marks, angled outwards at vein 7 and dentate at veins 4, 3, some slight olive suffusion beyond it; a terminal series of small streak-like marks; cilia chequered white and fuscous. Hind wing white, with fuscous subterminal marks at middle and below vein 2; a terminal waved line; the underside with discoidal spot and usually a curved postmedial punctiform line showing through to upperside.

♀. Darker; hind wing suffused with fuscous, the veins and a diffused subterminal band fuscous.

Ab. 1. *olivacea*. Fore wing suffused with olive-grey.—Scotland, Switzerland.

Ab. 2. *subcærulea*. Fore wing dark bluish grey.—N.E. Amurland.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Switzerland; Spain, Castile; Italy; Sicily; Lapland, Leech Coll; Russia, Livonia, Zeller Coll.; Armenia; W. Siberia, Altai; E. Siberia, N.E. Amurland. *Exp.* 38–40 millim.

Larva. Meyr. Brit. Lep. p. 54; Barrett, Lep. Brit. iv. p. 305, pl. 170.

Pale green; dorsal and subdorsal lines whitish; spiracular line broad, white, edged above by diffused dark green. Food-plants: Hawthorn, *Rumex*, *Sonchus*, &c. 4–5.

Genus **RHIZOTYPE**, nov.

Type, *R. flammea*.

Proboscis fully developed; palpi with the 2nd joint oblique, fringed with long hair below, the 3rd porrect; frons smooth; eyes large, rounded; antennæ of male minutely serrate and fasciculate; head and thorax clothed with hair and hair-like scales, vertex of head with crest; prothorax with large divided crest, metathorax with spreading crest; pectus clothed with long hair; abdomen with dorsal series of crests. Fore wing with the termen crenulate, veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

A. Fore wing with the postmedial line angled outwards at vein 5.
  a. Fore wing with the reniform and fascia on inner margin white ..... *flammea*.
  b. Fore wing with the reniform and fascia on inner margin tinged with purple or brown ..... *jodea*.
B. Fore wing with the postmedial line excurved from below costa to vein 4.
  a. Fore wing with black streak from claviform to postmedial line ..... *remota*.
  b. Fore wing without black streak from claviform to postmedial line.
    a^1. Fore wing with the claviform present.
      a^2. Fore wing with the ground-colour bluish grey.
        a^3. Fore wing strongly irrorated with black, the reniform large ..... *poliorhiza*.
        b^3. Fore wing slightly irrorated with black, the reniform small ..... *mongolica*.
      b^2. Fore wing with the ground-colour brownish grey. *subdetersa*.
    b^1. Fore wing with the claviform absent ..... *curva*.

2551. Rhizotype flammea.

Bombyx flammea, Esp. Schmett. iii. pl. 53. f. 3 (1785); Staud. Cat. Lep. pal. p. 184.

Noctua empyrea, Hübn. Eur. Schmett., Noct. ff. 63, 646 (1827); Dup. Lép. Fr. vi. p. 345, pl. 94, f. 4.

Head and thorax rufous mixed with some ochreous-white; sides of palpi and frons with some dark brown; antennæ brown; tegulæ with black medial line and purplish-grey tips; patagia purplish grey with black line near upper edge which is rufous; dorsal crest

tipped with ochreous; tarsi with whitish rings; abdomen pale rufous, whitish at base. Fore wing rufous suffused with greyish purple; subbasal line black defined by pale rufous on outer side, angled outwards on subcostal and median nervures and with slight oblique black streak beyond it across cell; a black-brown fascia above inner margin before the antemedial line; a creamy-white fascia on inner margin not quite reaching base; antemedial line indistinctly double filled in with greyish, angled outwards below costa and

Fig. 121.—*Rhizotype flammea*, ♂. ½.

strongly above inner margin, then strongly retracted; claviform very large, deep brown defined by black; orbicular purplish grey with slight whitish annulus defined by black, rather oblique elliptical; reniform creamy white defined by black, its centre defined by brown, strongly angled inwards on median nervure and with its upper extremity produced; an indistinct medial line angled outwards on subcostal nervure and on vein 2, in submedian fold and on vein 1 almost to postmedial line, the area beyond it before postmedial line red-brown except at costa; postmedial line slightly defined by whitish on outer side, double towards costa, bent outwards below costa, oblique to vein 5 where it is angled outwards, then incurved and slightly sinuous, with slight black and white points beyond it on veins 5 to 1, some white points beyond it on costa; subterminal line whitish slightly defined by rufous suffusion on inner side and by brown on outer, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia red-brown, with a fine ochreous line at base. Hind wing ochreous-white suffused with red-brown, the basal and costal areas paler, the veins brown; a fine waved dark terminal line; cilia rufous, with a fine pale line at base; the underside ochreous-white, the costal area tinged with purplish pink and slightly irrorated with brown, a dark discoidal spot and rather diffused curved postmedial line with minute dark streaks at the veins.

Hab. Britain, Leech Coll.; France, Zeller, Frey, and Leech Colls.; Germany; Austria; Hungary; Switzerland; Spain, Leech Coll.; Dalmatia. *Exp.* 44–52 millim.

Larva. Meyr. Brit. Lep. p. 128; Barrett, Lep. Brit. v. p. 47, pl. 190. f. 1.

Greenish brown, with numerous waved dark brown or blackish lines; a dorsal series of dark brown diamond-shaped marks; spots whitish; head and thoracic shield dark brown. Food-plants: *Ranunculus*, *Ligustrum*, Ash, &c. 12–5.

2552. Rhizotype jodea.

Phlogophora jodea, Guen. Ann. Soc. Ent. Fr. 1838, p. 220 (non descr.); Herr.-Schäff. Eur. Schmett. ii. p. 277, Noct. f. 457 (1845); Staud. Cat. Lep. pal. p. 184.

♂. Head and thorax red-brown mixed with white; sides of palpi and frons brown; tegulæ with black medial line; patagia usually suffused with fuscous; dorsal crest often whitish at tips; tarsi ringed with white; abdomen whitish tinged with rufous or dark brown except at base. Fore wing greyish suffused with pale purple; subbasal line represented by slight black striæ from costa and cell defined by whitish on outer side; a slight black streak in base of submedian fold; a blackish fascia above inner margin before the antemedial line; a whitish fascia irrorated with brown or tinged with purplish on inner margin, not reaching base; antemedial line indistinctly double filled in with whitish, rather oblique, angled outwards below costa and above inner margin to which it is strongly retracted; claviform very large, deep brown defined by black; obicular purplish with slight whitish annulus defined by black, more or less open above, somewhat oblique elliptical; reniform with purplish or brownish centre and whitish annulus defined by black, strongly angled inwards on median nervure and with its upper extremity produced; an indistinct medial line angled outwards on subcostal nervure and on vein 2, in submedian fold and on vein 1 almost to postmedial line, the area beyond it before postmedial line deep brown except towards costa; postmedial line black slightly defined by whitish on outer side, bent outwards below costa, oblique to vein 5 where it is angled outwards, then inwardly oblique and slightly sinuous, some black and white points beyond it on veins 5 to 1 and some white points on costa; subterminal line whitish slightly defined by brown on inner side, the area beyond it suffused with brown except towards apex, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of slight black lunules; cilia ochreous mixed with brown and with brown line through them. Hind wing whitish, the veins and terminal area more or less suffused with brown especially in female; a slight discoidal lunule, curved postmedial line, diffused subterminal band, and a fine waved terminal line; cilia ochreous white with a slight brown line through them; the underside with the costal area tinged with purplish pink, the costal and terminal areas irrorated with brown, a black discoidal spot, slight curved postmedial line, and traces of diffused subterminal band.

Ab. 1. Head, thorax, and fore wing much redder and without whitish.

Hab. France, Sand and Leech Colls.; Spain, Castile. *Exp.* 40–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 245.

Food-plants: Broom and Sloe in spring.

2553. Rhizotype remota. (Plate CV. fig. 1.)

Hadena remota, Püng. Iris, xii. p. 291, pl. 9. f. 19 (1899); Staud. Cat. Lep. pal. p. 171.

♂. Head and thorax brown mixed with grey; palpi fuscous at sides; frons with lateral black bars; antennæ black; tegulæ with medial black line; tip of prothoracic crest dark; abdomen brown, dorsally irrorated with fuscous, the crests dark. Fore wing grey-brown with slight dark irroration, the medial area tinged with rufous; a strong sinuous black streak below base of cell; subbasal line represented by two striæ from costa and a very oblique striga from cell; antemedial line double at costa, then interrupted, oblique in cell and emitting a short streak below subcostal nervure, strongly excurved from submedian fold to inner margin; claviform defined by black, acute at extremity and with a strong black streak from it to postmedial line; orbicular and reniform very large and almost conjoined, the former oblique elliptical, defined by black and open above, the latter defined by black on inner side and below and with some fuscous in centre, a black striga above it on costa; postmedial line indistinctly double, excurved and minutely dentate to vein 4, then single, incurved and prominently black; subterminal line indistinct, pale, defined by fuscous on inner side, slightly angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of small black lunules; cilia brown with paler line at base. Hind wing fuscous brown; cilia pale with a brown line near base; the underside grey irrorated with brown, a blackish discoidal lunule, sinuous postmedial line, and series of terminal striæ.

Hab. Tibet, Kuku Noor, 1 ♂, Amdo. *Exp.* 44 millim.

2554. Rhizotype poliorhiza. (Plate CV. fig. 2.)

Cucullia poliorhiza, Hmpsn. J. Bomb. Soc. xiv. p. 202, pl. 13. f. 27 (1902).

♀. Head and thorax fuscous brown mixed with bluish grey; frons with blackish bar; tegulæ with faint dark medial line; patagia with blackish outer edge; abdomen dark brown slightly mixed with greyish, the base pale. Fore wing with the ground-colour bluish grey almost entirely suffused with dark brown and thickly irrorated with black, the veins with slight dark streaks; a sinuous black streak below base of cell; subbasal line represented by double oblique black striæ from costa; antemedial line blackish and diffused from costa to submedian fold, angle doubly outwards below costa, oblique to submedian fold, then indistinctly double, angled inwards on vein 1 and outwards above inner margin; claviform very narrow, grey defined by black, acute at extremity; orbicular and reniform rather indistinctly defined by black, the former oblique, its lower extremity produced and confluent with the latter which is produced at upper extremity; postmedial line indistinct, double filled in with greyish, oblique from costa to vein 7, then minutely dentate, oblique below vein 4 and acutely angled inwards in submedian fold, a minute black streak beyond it above vein 7;

subterminal line hardly defined except by the area beyond it being rather browner with black streaks in the interspaces, those above and below vein 5 extending to postmedial line, in submedian interspace forming a wedge-shaped mark extending to postmedial line; a terminal series of slight black lunules; cilia dark brown with fine whitish line at base. Hind wing greyish uniformly suffused with reddish brown, the veins darker; a fine brown terminal line; cilia brown with fine whitish line at base; the underside grey-white slightly tinged and irrorated with brown, a slight discoidal lunule and diffused postmedial line with minute dark streaks on the veins.

Hab. Sikhim Tibet, Yatung (*Hobson*), 3 ♀ type. *Exp.* 52 millim.

*2555. Rhizotype mongolica. (Plate CV. fig. 3.)

Rhizogramma mongolica, Staud. Iris, ix. p. 263 (1896); id. Cat. Lep. pal. p. 183.

♂. Head, thorax, and abdomen blue-grey mixed with fuscous; mid and hind tibiæ streaked with black. Fore wing blue-grey irrorated with black; a black streak below base of cell connected with the claviform; subbasal line represented by a black striga from costa; antemedial line waved, oblique from costa to submedian fold, angled inwards on vein 1 and outwards above inner margin; claviform narrow, white defined by black and with black streak above it; orbicular and reniform small, with fuscous centres and whitish annuli defined by black, the former oblique elliptical and connected with latter above median nervure, some slight black streaks beyond lower angle of cell; postmedial line bent outwards below costa, somewhat dentate to vein 4, dentate nearly to cell above veins 3 and 2 and angled inwards in submedian fold; subterminal line defined by the area beyond it being suffused with fuscous, angled outwards at vein 7, to termen at veins 4, 3 and inwards in discal and submedian folds, with short black streaks beyond it in the interspaces and a black fascia before it in submedian fold from just beyond postmedial line; a fine white line at base of cilia. Hind wing greyish, nearly uniformly suffused with fuscous; cilia white with a fuscous line through them; the underside white slightly tinged with brown, the costal area irrorated with brown, a small discoidal lunule and sinuous postmedial line with darker streaks on the veins.

♀. Fore wing more suffused with fuscous.

Hab. W. Siberia, Altai, in Coll. Püngeler; Mongolia, Uliassutai. *Exp.* 46 millim.

2556. Rhizotype subdetersa. (Plate CV. fig. 4.)

Rhizogramma subdetersa, Staud. Iris, viii. p. 325 (1895); id. Cat. Lep. pal. p. 183.

♀. Head and thorax grey mixed with brown; frons with blackish lateral bars; abdomen grey slightly irrorated with brown. Fore wing grey irrorated with fuscous; subbasal line represented by

an oblique striga from costa; antemedial line indistinct, slightly angled outwards below costa, oblique to submedian fold, then angled inwards on vein 1; claviform moderate, defined by black, acute at extremity; orbicular and reniform defined by black, strongly below, the former oblique, emitting a streak from lower extremity confluent with the latter which is produced to a point above and emits a grey and black streak from its lower extremity, an oblique black striga from costa above it; postmedial line nearly obsolete, oblique from costa to vein 7, then highly dentate, oblique below vein 4; subterminal line almost obsolete, defined above middle and in submedian interspace by a brown shade on its inner side, excurved below costa and at middle and angled inwards in discal and submedian folds, with slight black streaks beyond it above veins 7, 6, 5, 4 and longer streaks above and below submedian fold some slight points on termen towards apex and streak in submedian fold with point beyond it on cilia; a fine pale line at base of cilia. Hind wing fuscous brown, the interspaces of basal and inner areas rather paler: cilia white with a fuscous line through them; the underside white irrorated with brown, traces of a curved postmedial line.

Hab. Tibet, Kuku Noor, 1 ♀, Amdo. *Exp.* 52 millim.

*2557. Rhizotype curva. (Plate CV. fig. 5.)

Rhiza curva, Staud. Stett. ent. Zeit. 1889, p. 46; id. Cat. Lep. pal. p. 183.

♀. Head, thorax, and abdomen brownish white. Fore wing brownish white; a very slight black streak below base of cell to antemedial line with whitish above it; subbasal line represented by a striga from costa; antemedial line brown, oblique from costa to submedian fold but interrupted in cell, then angled inwards on vein 1; orbicular and reniform small defined by blackish, the former narrow, oblique elliptical, and connected below with the latter which has some brown in centre; postmedial line minutely dentate, bent outwards below costa, excurved to vein 4, then oblique; subterminal line only defined by a slight brown shade beyond it, angled outwards to termen at veins 7, 4, 3 and inwards in discal and submedian folds, some short black streaks beyond it in the interspaces. Hind wing whitish tinged with brown and the terminal area suffused with brown; cilia white; the underside white, the costal and terminal areas irrorated with brown, a slight discoidal lunule and sinuous postmedial line with darker streaks on the veins.

Hab. W. Turkestan, Issyk Kul; E. Turkestan, Kashgar, in Coll. Püngeler. *Exp.* 42 millim.

Genus SYDIVA.

Type.

Sydiva, Moore, Lep. Atk. p. 95 (1882) ..... *algirensis*.

Proboscis fully developed; palpi with the 2nd joint obliquely upturned and fringed with hair in front, the 3rd porrect, very long and dilated at extremity; frons smooth, eyes large, rounded; antennæ of male minutely serrate and

fasciculate; head and thorax clothed with long rough hair and hair-like scales, the vertex of head crested, the thorax without distinct crests; pectus and tibiæ clothed with long hair; abdomen clothed with rough hair, a series of dorsal crests on basal segments and lateral fringes of hair. Fore wing with the apex somewhat produced, the termen obliquely curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2558. Sydiva nigrogrisea.

Sydiva nigrogrisea, Moore, Lep. Atk. p. 96 (1882); Hmpsn. Moths Ind. ii. p. 224.

Head and thorax black mixed with some brown and white; antennæ with white rings at base; pectus clothed with pale fulvous hair; tarsi ringed with white; abdomen ochreous suffused with brown, the dorsal crests blackish. Fore wing black-brown irrorated with ochreous and grey; some ochreous at base of inner margin; subbasal line represented by a black striga from costa defined by white on each side; antemedial line black defined by greyish on inner side and with small ochreous spots at costa and submedian fold, oblique, slightly waved; orbicular and reniform with grey-irrorated centres and incomplete ochreous annuli defined by black,

Fig. 122.—*Sydiva nigrogrisea*, ♂. ½.

the former small, upright elliptical, the latter large and constricted at middle; medial line oblique and diffused from costa to median nervure, then dentate; postmedial line forming an ochreous-white spot on costa, strongly bent outwards below costa, then dentate and defined by grey on outer side, incurved below vein 4, some white points beyond it on costa; subterminal line formed of a series of whitish lunules in the interspaces with black spots beyond them; cilia black-brown intersected with white forming white points at base and with black line through them. Hind wing with the basal half pale brownish ochreous, the terminal half pale fuscous brown; a black streak on extremity of vein 2; cilia brown at base, white at tips; the underside with curved, rather diffused postmedial line showing through to upperside.

Hab. Sikhim (*Sadler*, *Lidderdale*, *Atkinson*, *Horne*), 5 ♂, 3 ♀, type. *Exp.* 54 millim.

Genus ATHAUMASTA nov.

Thaumasta, Staud. Cat. Lep. Eur. p. 79 (1871), non descr. nec Gistl. Crust. 1848 ..... Type. *T. proxima*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front, the 3rd short; frons smooth; eyes large, rounded; head and thorax clothed chiefly with scales, the pro- and metathorax with spreading crests; pectus and tibiæ clothed with hair; abdomen with dorsal crest at base only. Fore wing rather short and broad, the apex rectangular, the termen crenulate; veins 3 and 5 from near angle of cell; 5 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of disco-cellulars, 6, 7 from upper angle or stalked; 8 anastomosing with cell near base only.

Sect. I. Antennæ of male bipectinate with moderate branches to apex.

A. Fore wing variegated with yellow ..... *expressa*.
B. Fore wing not variegated with yellow ..... *siderigera*.

2559. Athaumasta expressa.

Eumichtis expressa, Led. Verh. z.-b. Wien, 1855, p. 109, pl. 1. f. 8; Herr.-Schäff. Neue Schmett. f. 63; Staud. Cat. Lep. pal. p. 168.
Thaumasta ochracea, Staud. Stett. ent. Zeit. 1881, p. 410.
Thaumasta nana, Staud. Iris, ix. p. 241 (1896).

♂. Head and thorax orange mixed with whitish and black scales; vertex of head and metathorax with pairs of black spots; tegulæ with black band near upper edge; tarsi black ringed with white; abdomen fuscous mixed with whitish, the anal tuft and ventral surface whitish. Fore wing greyish white tinged in parts with orange and irrorated with black; subbasal line double at costa.

Fig. 123.—*Athaumasta expressa*, ♂. ½.

then single, waved, from costa to submedian fold; antemedial line black defined by white on inner side, excurved in submedian interspace and angled inwards on vein 1 and to inner margin; claviform indistinctly defined by black; orbicular and reniform with orange centres and white annuli defined by black, the former rounded, open above; a waved medial line strongly excurved in cell; postmedial line double filled in with white, bent outwards below costa, then dentate, excurved to vein 4, then incurved, some white points beyond it on costa; subterminal line represented by a curved series of whitish lunules defined by dentate black marks on inner side; a terminal

series of small black lunules defined by white on inner side; cilia chequered white and black. Hind wing white suffused with fuscous except on costal area; postmedial and subterminal diffused lines excurved at middle and incurved in submedian interspace, defined by white on outer side on inner area; cilia white with some fuscous; the underside white irrorated with fuscous, a discoidal point and diffused sinuous ante- and postmedial lines.

Ab. 1. *ochracea*. Thorax and fore wing with the orange markings more prominent.

Ab. 2. *nana*. Smaller; fore wing dark grey.

Hab. W. Turkestan, Saisan, 1 ♂; W. Siberia, Altai; Mongolia, Uliassutai. *Exp.* 30–36 millim.

*2560. Athaumasta siderigera.

Thaumasta siderigera, Christ. Iris, vi. p. 90 (1893); Staud. Cat. Lep. pal. p. 168.

♂. Head and thorax black mixed with white. Fore wing fuscous black, the lines black; subbasal line from costa to submedian fold; antemedial line defined by white on outer side, waved; orbicular with strong white annulus; reniform with white spot on its outer edge; postmedial line crenulate, defined by white lunules on outer side; subterminal line dentate, defined on each side by white spots; terminal line black; cilia white mixed with black. Hind wing grey, with dark discoidal lunule and diffused curved postmedial and subterminal lines.

Hab. E. Siberia, Sajan Mts. *Exp.* 44 millim. This species is unknown to me.

Sect. II. Antennæ of male ciliated.

2561. Athaumasta cortex.

Miselia cortex, Alph. Stett. ent. Zeit. 1887, p. 169; id. Rom. Mém. v. p. 159, pl. 7. f. 4; Staud. Cat. Lep. pal. p. 181.
Miselia corticula, Püng. Iris, xiv. p. 185, pl. 2. f. 16 (1901).

♂. Head and thorax ochreous mixed with bright rufous and some fuscous scales; tarsi with pale rings; abdomen pale ochreous

Fig. 124.—*Athaumasta cortex*, ♂. ½.

tinged with rufous and slightly irrorated with fuscous. Fore wing pale ochreous suffused in parts with rufous and thickly irrorated with rufous and fuscous; a slight diffused dark streak below base

of cell; subbasal line double filled in with whitish, waved, from costa to submedian fold; antemedial line double filled in with whitish, oblique, dentate; claviform moderate, defined by blackish; orbicular and reniform with some fuscous in centres and pale annuli defined by fuscous, the former oblique, rather oblong; traces of an irregular medial line; postmedial line defined by whitish on outer side, double towards costa, strongly bent outwards below costa, then strongly dentate, oblique below vein 4 and acutely angled inwards in submedian fold; some whitish points beyond it on costa; subterminal line pale, defined by rufous on inner side, slightly angled outwards at vein 7 and dentate at veins 4, 3; the veins of terminal area with slight dark streaks; a terminal series of small black lunules; cilia ochreous and rufous with a dark line through them. Hind wing yellowish white, the veins and terminal area irrorated with reddish brown, a discoidal lunule, sinuous punctiform postmedial line, slight diffused subterminal band, and waved dark terminal line except towards tornus.

Ab. 1. *corticula*. Fore wing grey suffused with dark brown.

Hab. W. Turkestan, Aram-Kungei, 1 ♂; E. Turkestan. *Exp.* 31–46 millim.

Genus **BRYOTYPE**, nov.

Type, *B. mesomelana*.

Proboscis fully developed; palpi oblique, fringed with hair in front; the 3rd joint short; frons smooth; eyes large, rounded; head and thorax clothed chiefly with scales, the prothorax with divided crest, the metathorax with spreading crest; tibiæ fringed with hair; abdomen with dorsal crest at base only. Fore wing with the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male minutely serrate and fasciculate.

*2562. Bryotype flavipicta.

Eurois flavipicta, Hmpsn. Moths Ind. ii. p. 229 (1894).

♂. Head and thorax clothed with yellow, rufous, and grey scales; sides of palpi and frons blackish; tegulæ with black line near tips; tarsi blackish with pale rings; abdomen fuscous, the anal tuft and ventral surface with some whitish. Fore wing leaden grey with a purplish tinge, the veins irrorated with black; a curved black streak below base of cell, diffused below and with yellowish patches above it and beyond its extremity; subbasal line represented by double black striæ from costa; an oblique black streak in cell before the antemedial line which is defined by ochreous whitish on inner side, oblique from costa to vein 1, then bent inwards to inner margin; claviform incompletely defined by black and with diffused black fascia through it to postmedial line; orbicular yellow defined by black except above, and with rufous

centre, oblique quadrate; reniform narrow, defined on inner side by an oblique black line followed by a yellow bar, its outer part greyish, ill-defined by whitish; postmedial line double at costa, then single, indistinct, slightly defined by whitish on outer side, strongly bent outwards below costa, excurved to vein 4, then bent inwards to lower edge of reniform and oblique to inner margin; subterminal line yellow, slightly defined by rufous on inner side and with blackish suffusion beyond it at discal fold and towards

Fig. 125.—*Bryotype flavipicta*, ♂. ½.

tornus, angled outwards at vein 7 and excurved at middle, with yellow streaks in interspaces from it to termen; a fine waved black terminal line; cilia grey with a black line through them. Hind wing fuscous brown, the termen slightly paler, a fine black terminal line; cilia brownish white with a brown line through them; the underside grey-white irrorated with fuscous, a black discoidal spot and curved postmedial line.

Hab. Sikhim, 10,000′ (*Möller*), type † ♂ in Coll. Elwes. *Exp.* 32 millim.

Sect. II. Antennæ of male ciliated.

2563. Bryotype mesomelana.

Euplexa mesomelana, Hmpsn. J. Bomb. Soc. xiv. p. 200 (1902).

♂. Head dark brown mixed with grey and with some olive-green scales on vertex; tegulæ olive-green at base, with black medial line and red-brown tips mixed with grey; thorax red-brown, the patagia with black scales near upper edge, the prothoracic crest tipped with whitish, the metathoracic crest with pink: pectus and legs brown mixed with grey, the tarsi ringed with white; abdomen brown mixed with some grey. Fore wing pale flesh-pink largely suffused with golden olive-green, the medial area fuscous black: except towards costa and inner margin, the veins with slight dark streaks; subbasal line represented by two black striæ from costa; a strong curved black mark above base of vein 1 with some fuscous suffusion above its extremity in and below cell, and beyond it above and below vein 1; antemedial line with double black striæ from costa, interrupted below costa, then single, oblique to just above vein 1; claviform defined by black, short and broad, extending to median nervure; orbicular pinkish defined by black except above, its centre slightly defined by fuscous, some whitish on its annulus above, somewhat oblique elliptical; reniform defined by black on inner side and below, with black centre and olive annulus

whitish above and on outer side, slightly angled inwards on median nervure; postmedial line with two black spots at costa, then single, indistinct, strongly bent outwards below costa, then minutely dentate to vein 4, then strongly incurved to lower edge of reniform, some white points with black streaks between them on costa; subterminal line whitish strongly defined by black on inner side,

Fig. 126.—*Bryotype mesomelana*, ♂. ½.

excurved below vein 7 and at middle, then incurved, a fine waved black terminal line and line through the cilia. Hind wing pale, uniformly suffused with reddish brown; cilia white with fine brown line through them; the underside whitish, the costal and terminal areas irrorated with brown, a black discoidal spot and sinuous postmedial line.

Hab. Punjab, Simla (*Pilcher*), 1 ♂ type. *Exp.* 36 millim.

Genus **HYPOTYPE**, nov.

Type, *H. scotomista*.

Proboscis fully developed; palpi obliquely upturned, fringed with hair in front, the 3rd joint short; frons smooth; eyes large, rounded; antennæ of male typically minutely ciliated; head and thorax clothed almost entirely with scales and without crests; pectus clothed with long hair; abdomen with dorsal crest at base only. Fore wing with the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked or from angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male minutely serrate and fasciculate.

*2564. Hypotype plumbea.

Polia plumbea, Staud. Iris, vii. p. 276 (1894); id. Cat. Lep. pal. p. 180.

♂. Head and thorax pale grey largely mixed with black; palpi and lower part of frons whitish, the former black above, the latter with black lateral bars; pectus white with some fuscous hairs; tarsi banded black and white; abdomen white tinged with fuscous, the dorsal crest mixed with black. Fore wing pale grey very thickly irrorated with fuscous; subbasal line whitish, waved, from costa to submedian fold; antemedial line whitish, waved, oblique; orbicular and reniform with whitish annuli, the former small, round, the latter indistinctly defined with a white point on inner lower edge; postmedial line whitish, indistinct, bent outwards below

costa, then dentate and produced to white points on the veins, oblique below vein 4, some white points beyond it on costa; subterminal line indistinct, whitish, slightly defined by fuscous on inner side, angled outwards at vein 7, excurved and slightly waved at middle; a terminal series of minute black lunules; cilia white with series of fuscous lunules. Hind wing pure white, the veins faintly tinged with fuscous at termen.

Fig. 127.—*Hypotype plumbea*, ♂. ½.

♀. Abdomen and hind wing strongly suffused with fuscous, the latter with fuscous line through the cilia; the underside slightly irrorated with fuscous and with diffused terminal band.

Hab. Palestine, Jerusalem, in Coll. Püngeler. *Exp.* 44 millim.

Sect. II. Antennæ of male minutely ciliated.

A. Fore wing with black streak below base of cell ..... *nigridentata.*
B. Fore wing without black streak below base of cell ..... *scotomista.*

2565. Hypotype nigridentata. (Plate CV. fig. 6.)

Polia nigridentata, Hmpsn. Ann. S. Afr. Mus. ii. p. 278 (1902).

♂. Head grey and fuscous with white bar on vertex; tegulæ grey and fuscous with some black scales at middle and whitish tips; patagia and thorax grey and fuscous; tarsi blackish with pale rings; abdomen ochreous suffused with fuscous. Fore wing grey-white thickly irrorated with black; a black streak below base of cell and a tuft of white scales followed by black scales at base: an indistinct waved black antemedial line; claviform indistinctly defined by black; orbicular and reniform large, rather indistinctly defined, the former rounded, the latter open above and below; postmedial line rather indistinct and diffused, bent outwards below costa, then dentate, excurved to vein 4, then strongly incurved, some white points beyond it on costa; subterminal line represented by a series of dentate black marks with whitish suffusion beyond them, slightly angled outwards at vein 7 and inwards in submedian fold; a short black streak on extremity of vein 2; a terminal series of small black lunules. Hind wing fuscous; the underside whitish suffused with brown.

Hab. Cape Colony, Transkei (*Miss F. Barrett*), 1 ♂ type. *Exp.* 44 millim.

2566. Hypotype scotomista.

Polia scotomista, Hmpsn. Ann. S. Afr. Mus. ii. p. 278 (1902).

♂. Head and thorax clothed with white and black-brown scales; tarsi blackish with pale rings; abdomen ochreous white dorsally suffused with fuscous. Fore wing rather narrow, white, thickly irrorated with black-brown; subbasal line represented by a white point on costa; antemedial line very indistinct, curved, with white point at costa; claviform represented by a slight white mark; orbicular a small white ocellus; reniform large, indistinctly defined, with whitish annulus; traces of a dark medial shade; postmedial line with white point at costa, bent outwards below costa, then minutely dentate, indistinct, excurved to vein 4, then

Fig. 128.—*Hypotype scotomista*, ♂. ½.

incurved; subterminal line very indistinct, whitish defined by fuscous on inner side, somewhat dentate at veins 7, 6 and excurved at middle; a terminal series of small black lunules; cilia chequered fuscous and white. Hind wing ochreous whitish tinged with brown especially on terminal area; cilia white; the underside white with slight dark streak in cell and discoidal spot, a sinuous postmedial line and some brown irroration on terminal area.

♀. Fore wing broader; hind wing nearly uniformly suffused with fuscous and without markings on underside.

Hab. Natal, Coast belt; Cape Colony, Kokstad (*Mrs. Pringle*), 1 ♀, Cape Town, 1 ♂ type. *Exp.* 42-48 millim.

Genus **BRYOMIMA**.

	Type.
Bryomima, Staud. Iris, xii. p. 357 (1899)	*carducha*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair, the 3rd short; frons smooth; eyes large, rounded; antennæ of male ciliated or almost simple; head and thorax clothed with hair and a few scales mixed, without distinct crests; tibiæ fringed with long hair on outer side; abdomen with dorsal crest at base only. Fore wing with the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male with fasciculate cilia.

A. Hind wing with the ground-colour white.
  a. Fore wing with black streak below base of cell ..... *johanna*.
  b. Fore wing without black streak below base of cell ..... *fallax*.
B. Hind wing entirely suffused with brown.
  a. Fore wing with the ante- and postmedial lines filled in with whitish ..... *centralasiæ*.
  b. Fore wing with the ante- and postmedial lines not filled in with whitish.
    a^1. Fore wing with the postmedial line bent inwards below vein 4 to lower edge of reniform.
      a^2. Fore wing without dentate dark marks on inner side of subterminal line.
        a^3. Fore wing with the ground-colour grey not tinged with flesh colour ..... *extrita*.
        b^3. Fore wing with the ground-colour grey tinged with flesh-colour or yellowish ..... *tenuicornis*.
      b^2. Fore wing with dentate dark marks on inner side of subterminal line.
        a^3. Fore wing more or less tinged with ochreous..... *chamæleon*.
        b^3. Fore wing olive-grey without ochreous tinge ..... *virescens*.
    b^1. Fore wing with the postmedial line oblique below vein 4.
      a^2. Fore wing with black streak below base of cell ..... *speciosa*.
      b^2. Fore wing without black streak below base of cell... *muscosa*.

2567. Bryomima johanna. (Plate CV. fig. 7.)

Polia johanna, Staud. Iris, x. p. 281, pl. 4. f. 19 (1897); id. Cat. Lep. pal. p. 180.

Head and thorax ochreous white mixed with some fuscous; tarsi banded with black; abdomen white irrorated with fuscous. Fore wing ochreous white irrorated with fuscous and slightly suffused with brown, especially on medial area; a sinuous black streak below base of cell; subbasal line represented by a black point on costa; antemedial line black defined by whitish on inner side, oblique and minutely waved from costa to submedian fold, then angled inwards on vein 1; claviform small, indistinctly defined by black and with black streak from it to postmedial line; orbicular and reniform well-developed, whitish defined by black and with some brownish in centres, the former rather diamond-shaped, open above; postmedial line black defined by whitish on outer side, bent outwards below costa, then dentate, below vein 4 strongly incurved to below cell; subterminal line indistinct, whitish defined by slight dentate dark marks on inner side at middle and by the area beyond it being slightly browner, angled outwards at vein 7 and dentate to termen at veins 4, 3; a terminal series of small black lunules; cilia with a fine white line at base. Hind wing white, the veins and terminal area irrorated with fuscous; a fine waved black terminal line; the underside with the costal and terminal areas irrorated with fuscous; a slight discoidal point and curved postmedial line.

Hab. Palestine, 1 ♂, 1 ♀. *Exp.* 34 millim.

2568. Bryomima fallax, n. sp. (Plate CV. fig. 8.)

Perigea falsa, Grote, Can. Ent. xii. p. 215 (1880) ♀ (nec ♂)*; Smith, Cat. Noct. N. Am. p. 153.

♂. Head and thorax ochreous mixed with fuscous; tarsi fuscous ringed with white; abdomen ochreous, dorsally suffused with fuscous. Fore wing ochreous with an olive tinge and suffused in parts with fuscous; subbasal line indistinct, dark, from costa to submedian fold; antemedial line black defined by ochreous on inner side, oblique, waved; claviform absent; orbicular and reniform ochreous slightly defined by fuscous, the former small, round, the latter with dark lunule in centre; traces of a sinuous medial line; postmedial line indistinct, bent outwards below costa, then dentate and produced to slight white points on the veins, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line defined by a broad band of fuscous suffusion on inner side, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia with series of fuscous points at tips. Hind wing white, the veins, costal and terminal areas suffused with fuscous brown, a small discoidal spot; cilia ochreous white with a slight brown line through them; the underside with the costal and terminal areas irrorated with brown, a small discoidal spot and punctiform postmedial line.

♀. Hind wing with the basal area tinged with brown.

Hab. U.S.A., California, Havilah, 2 ♂, 1 ♀ type. *Exp.* 32 millim.

2569. Bryomima centralasiæ.

Polia centralasiæ, Staud. Stett. ent. Zeit. xliii. p. 37 (1882); Alph. Hor. Ent. Soc. Ross. xvii. p. 77, pl. 3. f. 54; Staud. Cat. Lep. pal. p. 180.
Hecatera transversa, Moore, Lep. Atk. p. 125 (1882); Hmpsn. Moths Ind. ii. p. 232.
Hecatera modesta, Moore, Lep. Atk. p. 125 (1882).
Polia asiatica, Alph. Stett. ent. Zeit. 1887, p. 169; id. Rom. Mém. v. p. 156, pl. 6. f. 7.

Head and thorax brownish grey mixed with fuscous; tarsi

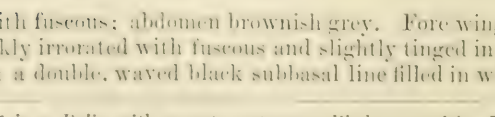


Fig. 129.—*Bryomima centralasiæ*, ♂. ½.

banded with fuscous; abdomen brownish grey. Fore wing brownish grey, thickly irrorated with fuscous and slightly tinged in parts with ochreous; a double, waved black subbasal line filled in with whitish

* The ♂ is a *Polia* with serrate antennæ allied to *canities*, Hmpsn., and *leucogramma*, Grote.

from costa to submedian fold; a double oblique minutely waved black antemedial line filled in with whitish; claviform small, indistinctly defined by black; orbicular and reniform small with some fuscous in centres and grey annuli defined by black, the former rather elliptical, the latter narrow and somewhat constricted at middle; a waved medial line; postmedial line double filled in with whitish, bent outwards below costa, then dentate, incurved below vein 4 to lower edge of reniform, some whitish points beyond it on costa; subterminal line pale, defined on each side by fuscous, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of slight blackish lunules; cilia chequered fuscous and whitish, yellowish at base. Hind wing fuscous brown: the cilia whitish; the underside ochreous whitish, the costal area irrorated with brown, the terminal area suffused with brown, a slight discoidal lunule and somewhat sinuous postmedial line.

Ab. 1. *transversa*. Fore wing with the basal and postmedial areas whitish except at costa, the medial area blackish, the lines indistinctly double.

Hab. W. Turkestan, Turcomania 1 ♂, 1 ♀, Tarbagatai Mts., Issyk Kul; Kashmir (*Thompson*, *Reed*), 3 ♂, 3 ♀, type *transversa*, Kokser (*McArthur*), 2 ♀, Barra Larcha (*McArthur*), 4 ♂, 4 ♀, Rala, (*McArthur*), 1 ♂, Gourais Valley (*Leech*), 1 ♀; Punjab, 1 ♀ type *modesta*, Thundiani (*Yerbury*), 1 ♀. *Exp.* 36–40 millim.

2570. **Bryomima extrita.** (Plate CV. fig. 9.)

Polia extrita, Staud. Stett. ent. Zeit. 1888, p. 23; Staud. Cat. Lep. pal. p. 180.

Head, thorax, and abdomen grey mixed with fuscous; neck tinged with ochreous; tarsi blackish with pale rings. Fore wing grey tinged with brown and thickly irrorated with black; subbasa line represented by paired black marks on costa and below cell with grey striæ between them; antemedial line waved, defined by grey on inner side; orbicular and reniform with some fuscous in centres and whitish annuli defined slightly by black, the former rather oblique elliptical; a distinct medial line oblique from costa to median nervure, then slightly waved; postmedial line defined by grey on outer side, bent outwards below costa, then minutely waved, excurved to vein 4, then incurved, some grey points beyond it on costa; subterminal line grey, indistinct, slightly waved, angled inwards in discal and submedian folds and defined on inner side by small black marks; a terminal series of black points; cilia chequered black and grey. Hind wing fuscous, the cilia grey with a fuscous line through them; the underside slightly paler, with slight discoidal lunule and sinuous postmedial line.

Hab. W. Turkestan, Ferghana, Sarawschan; E. Turkestan, Kuldja, 1 ♀; Mongolia, Aksu, 1 ♂. *Exp.* 38 millim.

2571. Bryomima tenuicornis. (Plate CV. fig. 10.)

Polia tenuicornis, Alph. Stett. ent. Zeit. 1887, p. 169; id. Rom. Mém. v. p. 155, pl. 6. f. 9; Staud. Cat. Lep. pal. p. 180.

♂. Head, thorax, and abdomen grey mixed with pale fuscous; sides of palpi and frons fuscous; tarsi fuscous ringed with white. Fore wing grey slightly tinged with flesh-colour and irrorated with fuscous; subbasal line represented by black striæ from costa and cell; antemedial line strong, black, oblique, slightly waved; orbicular and reniform pale incompletely defined by blackish, the former small, oblique elliptical, the latter with straight inner edge; a rather diffused dark waved medial line, oblique from costa to median nervure; postmedial line strong, black, indistinctly double towards costa, bent outwards below costa, then dentate, below vein 4 incurved to lower edge of reniform, then rather oblique, some pale points with black striæ between them beyond it on costa; subterminal line very faintly defined on each side by fuscous and with slight fuscous suffusion before it at costa, somewhat dentate, angled outwards at vein 7 and excurved at middle; a terminal series of minute black lunules. Hind wing greyish suffused with fuscous-brown, the terminal area darker except towards tornus; cilia white, brownish at base; the underside white slightly irrorated with brown, a diffused sinuous postmedial line.

♀. Head, thorax, and fore wing more strongly tinged with flesh-colour.

Ab. 1. Head, thorax, abdomen, and fore wing much more strongly irrorated with fuscous.

Hab. W. Turkestan, Ferghana, Togus-torau, Alexander Mts.; E. Turkestan, Kuldja, 3 ♂, 1 ♀. *Exp.* 40 millim.

2572. Bryomima chamæleon. (Plate CV. fig. 11.)

Polia chamæleon, Alph. Stett. ent. Zeit. 1887, p. 169; id. Rom. Mém. v. p. 153, pl. 6. ff. 8, *a*, *b*; Staud. Cat. Lep. pal. p. 180.

♂. Head and thorax grey tinged with olive-yellow and reddish brown; tegulæ with slight dark medial line; patagia with bluish fuscous line near edges; tarsi banded with fuscous; abdomen grey tinged with ochreous and brown and irrorated with fuscous. Fore wing grey more or less suffused with pale reddish ochreous and thickly irrorated with fuscous; subbasal line represented by double black striæ from costa and cell; antemedial line double, minutely waved, angled inwards on vein 1; claviform short and broad, defined by black except above; orbicular and reniform with reddish annuli defined by black, both rather open above and below and constricted at middle; a rather diffused, minutely waved medial line; postmedial line slightly bent outwards below costa, then dentate, below vein 4 incurved to lower edge of reniform; a reddish subterminal line defined on inner side by small dentate blackish marks below costa and at middle and with slight blue-grey suffusion beyond it, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia ochreous with a

fuscous line through them. Hind wing ochreous nearly uniformly suffused with fuscous; cilia ochreous with a fuscous line through them; the underside whitish irrorated with fuscous, the costal area tinged with ochreous, a discoidal lunule, a diffused irregular postmedial line showing through to upperside, some fuscous suffusion on termen.

Hab. W. Turkestan, Turcomania, 1 ♂, Ferghana, Sarawschan, Issyk Kul; E. Turkestan, Ili; Kashmir, Barra Larcha (*McArthur*), 1 ♂, 3 ♀, Kokser (*McArthur*), 4 ♂, Kuijar (*McArthur*), 1 ♂; Punjab, Kulu, 1 ♀. *Exp.* 48 millim.

2573. Bryomima virescens. (Plate CV. fig. 12.)

Polia virescens, Hmpsn. Moths Ind. ii. p. 234 (1894).

Head, thorax, and abdomen olive-grey mixed with fuscous; tarsi blackish ringed with white. Fore wing olive-grey thickly irrorated and suffused with fuscous; subbasal line indistinct, double, waved, from costa to vein 1; antemedial line indistinct, double, waved, angled inwards on vein 1; claviform hardly traceable; orbicular and reniform somewhat paler, large, indistinctly defined by blackish, constricted at middle and open above and below; postmedial line indistinctly double, bent outwards below costa, then dentate, incurved below vein 4 to lower edge of reniform, some pale points beyond it on costa; subterminal line indistinct, pale, defined on inner side by obscure, somewhat dentate, black marks, slightly excurved below costa and at middle: cilia chequered greyish and fuscous. Hind wing fuscous; an ill-defined pale line from vein 3 to termen at vein 1; cilia greyish ochreous with a fuscous line through them; the underside pale thickly irrorated with brown, an indistinct discoidal lunule and curved postmedial line.

Hab. Kashmir, Dugi Pass, 12,500′ (*Thompson*), 1 ♂ type. *Exp.* 46 millim.

*2574. Bryomima speciosa.

Polia speciosa, Morr. Proc. Bost. Soc. Nat. Hist. xvii. p. 137 (1874); Smith, Cat. Noct. N. Am. p. 166.

Head and thorax grey; tegulæ with medial black line; metathoracic crest tipped with black; abdomen fuscous. Fore wing grey, the medial area dark bluish olive-grey; a bifid black streak at base, the upper branch fine, extending along subcostal nervure to the antemedial line, the lower branch short and thick; the streak in submedian fold prominent, the area between the two streaks whitish; subbasal line present; antemedial line double, excurved in interspaces and strongly angled outwards above inner margin; claviform strongly defined by black; orbicular and reniform with olive centres and yellowish white annuli defined by black, the reniform large, irregular, with straight inner edge and strongly excised outer edge; medial shade dark, oblique from costa to near postmedial line below the cell; postmedial line indistinctly double,

dentate towards costa and oblique below vein 4; postmedial and terminal areas bluish olive-grey; subterminal line white defined on inner side by four prominent black dentate marks at middle and by more or less distinct olive spots on outer side; a terminal series of small triangular black spots; cilia intersected with whitish. Hind wing fuscous with a black line at base of cilia which are yellowish; the underside whitish, with distinct discoidal point, traces of a postmedial line and diffused subterminal shade.

Hab. U.S.A., Massachusetts, Cambridge. *Exp.* 45 millim. This species is unknown to me.

2575. Bryomima muscosa, n. sp. (Plate CV. fig. 13.)

♀. Head and thorax clothed with ochreous, grey, and fuscous hair and scales; tarsi blackish ringed with white; abdomen grey dorsally irrorated with fuscous. Fore wing grey mostly suffused and irrorated with olive-fuscous; an olive-fuscous subbasal line from costa to submedian fold; antemedial line waved, somewhat oblique, defined by whitish on inner side; claviform and orbicular obsolete; reniform small with indistinct whitish annulus; postmedial line defined by whitish on outer side, bent outwards below costa, then dentate, incurved below vein 4, some pale points on costa beyond it; subterminal line indistinct, whitish, angled outwards at vein 7, excurved at middle and angled inwards at discal and submedian folds, the area beyond it rather greyer; a terminal series of slight dark lunules; cilia yellowish mixed with fuscous. Hind wing uniform fuscous brown; cilia paler; the underside grey irrorated with brown, a discoidal point and curved diffused postmedial line and subterminal band.

Hab. U.S.A., Washington Terr., 1 ♀ type. *Exp.* 34 millim.

Sect. II. Antennæ of male laminate and almost simple.

A. Fore wing with the medial area darker than the ante- and postmedial areas.
  a. Fore wing with slight rufous streaks in discal and submedian folds ..... *pulverulenta*.
  b. Fore wing without rufous streaks in discal and submedian folds ..... *carducha*.
B. Fore wing with the medial area paler than the ante- and postmedial areas ..... *chrysolectra*.

2576. Bryomima pulverulenta. (Plate CV. fig. 14.)

Perigea pulverulenta, Smith, Trans. Am. Ent. Soc. xviii. p. 105 (1891); id. Cat. Noct. N. Am. p. 154.

♂. Head and thorax ochreous white mixed with some rufous and black; tarsi fuscous with pale rings; abdomen greyish irrorated with fuscous and suffused with brown. Fore wing grey suffused in parts with fuscous and thickly irrorated with black; diffused pale pinkish fasciæ in submedian and discal folds; subbasal line represented by double black striæ from costa and cell; antemedial line oblique, waved, angled inwards on vein 1; claviform absent,

orbicular with dark centre and undefined whitish annulus, round; reniform grey, undefined, with dark spot in lower part; an indistinct waved medial line; postmedial line black defined by grey on outer side, bent outwards below costa, then dentate, incurved below vein 4, some white points beyond it on costa; subterminal line grey slightly defined by blackish suffusion on inner side, angled outwards below veins 7 and 4, then oblique; cilia ochreous white mixed with fuscous and with a dark line through them. Hind wing ochreous-white suffused and thickly irrorated with brown, the terminal area broadly fuscous brown; a dark discoidal spot and indistinct curved postmedial line; cilia whitish with a dark line near base; the underside white thickly irrorated with brown, the terminal area suffused with fuscous, a black discoidal lunule and sinuous post-medial line.

Hab. U.S.A., Colorado (*Cockerell*), 1 ♂, Glenwood Springs, Boulder, 1 ♂, Arizona, Prescott (*H. Edwards*, *Kunzé*), 2 ♂, 2 ♀. *Exp.* 28 millim.

2577. **Bryomima carducha.**

Bryomima carducha, Staud. Iris, xii. p. 357, pl. 6. f. 9 (1899); id. Cat. Lep. pal. p. 167.

Head and thorax clothed with whitish, brown and black hairs and scales; tarsi whitish banded with black; abdomen whitish, tinged with brown and irrorated with fuscous. Fore wing greyish ochreous thickly irrorated with black, the medial area darker; sub-basal line represented by two black spots on costa; antemedial line

Fig. 130.—*Bryomima carducha*, ♂. ½.

very indistinct, defined by pale colour on each side, minutely waved and almost erect; claviform small, obscurely defined by black; orbicular and reniform ochreous white defined by black and with black centres, the former small, round; medial line represented by a blackish spot on costa; postmedial line indistinct, bent outwards below costa, then dentate, excurved to vein 4, then oblique, a series of blackish spots with whitish striæ between them beyond it on costa; subterminal line only represented by a blackish bar from costa; a series of obscure dark spots before termen on which is a series of slight black striæ; cilia ochreous intersected with fuscous. Hind wing fuscous, the basal and inner areas pale, irrorated and partly suffused with fuscous; dark spots on inner margin and termen near tornus; cilia white tinged with ochreous at base: the underside white slightly irrorated with fuscous, the costal area tinged with ochreous, the terminal area darker, a curved rather diffused postmedial line.

Hab. Syria, Mardin; Mesopotamia, 1 ♂, 1 ♀. *Exp.* 28–30 millim.

2578. Bryomima chryselectra. (Plate CVIII. fig. 4.)

Hadena chryselectra, Grote, Can. Ent. xii. p. 244 (1880); Smith, Cat. Noct. N. Am. p. 147.
Perigea benigna, H. Edw. Papilio, iv. p. 122 (1884); Smith, Cat. Noct. N. Am. p. 154.

♀. Head and thorax whitish suffused with pale pinkish; palpi tinged with fuscous at sides; tegulæ with a few black scales; prothoracic crest mixed with brown; tarsi blackish ringed with white; abdomen ochreous dorsally suffused with fuscous, the base white. Fore wing white irrorated with a few dark scales, the ante- and postmedial areas pale pinkish; subbasal line double, dark, waved, from costa to submedian fold; antemedial line double, dark, irregularly waved; claviform absent; orbicular and reniform small, defined by black, the former round; an irregular medial shade obsolescent except towards costa; postmedial line double, bent outwards below costa, then waved, excurved to vein 4, then strongly incurved and bent outwards to inner margin, some white points beyond it on costa; subterminal line defined only by fuscous dentate marks on inner side, dentate, above and below vein 5 angled inwards to near postmedial line; a terminal series of small black lunules; cilia ochreous white. Hind wing whitish tinged with brown, the terminal area broadly fuscous brown; traces of a discoidal point and postmedial line; cilia pale yellow; the underside white slightly irrorated with brown and the terminal area tinged with brown.

Hab. U.S.A., Colorado, Arizona, Cochise Co., Wilgus, 1 ♀. *Exp.* 32 millim.

Subsp. 1. Head and thorax suffused with deep olive fuscous; fore wing with the ante- and postmedial areas deep olive-fuscous, the dentate medial shade strong.

Hab. Mexico, Orizaba (*Schaus*), 1 ♀.

Genus BLEPHARIDIA.

Blepharidia, Püng. Iris, xiii. p. 122 (1900) ..... Type. *lama*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with long hair in front; frons smooth; eyes large, rounded; antennæ of male typically minutely serrate and fasciculate; head and thorax clothed with hair and hair-like scales, the pro- and metathorax with spreading crests; tibiæ fringed with hair; abdomen with dorsal crest at base only. Fore wing with the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with moderate branches, the apical third serrate.

2579. Blepharidia amicina.

Hadena amicina, Staud. Iris, viii. p. 322 (1895); id. Cat. Lep. pal. p. 171.

♂. Head and thorax rufous, the scales slightly tipped with grey; abdomen rufous, the anal tuft pale rufous. Fore wing rufous

slightly suffused with grey, the medial and terminal areas darker : the veins with dark streaks ; subbasal line represented by slight double dark striæ from costa and cell filled in with grey ; antemedial line indistinctly double, filled in with grey, oblique, sinuous ; orbicular and reniform pale rufous with pale annuli defined by

Fig. 131.—*Blepharidia amicina*, ♂. ½.

brown, the former rather oblique elliptical, open above ; postmedial line defined by greyish on outer side, bent outwards below costa, then somewhat dentate, incurved below vein 4, some pale points beyond it on costa ; subterminal line defined by the contrast between the pale and dark areas, somewhat angled outwards at vein 7 and dentate at veins 4, 3 ; a fine dark terminal line, a pale line at base of cilia. Hind wing red-brown ; a fine dark terminal line, a pale line at base of cilia ; the underside paler with small discoidal lunule and curved postmedial line.

Hab. Tibet, Kuku Noor, 1 ♂, Amdo. *Exp.* 40 millim.

Sect. II. Antennæ of male bipectinate with short branches ending in a bristle.

2580. Blepharidia grumi.

Heliopholus grumi, Alph. Hor. Ent. Soc. Ross. xxvi. p. 447 (1892) ; id. Rom. Mém. ix. p. 22, pl. 1. f. 5 ; Staud. Cat. Lep. pal. p. 177.

♂. Head and thorax red-brown mixed with greyish ochreous ; patagia with whitish stripe defined by blackish ; abdomen pale red-brown. Fore wing red-brown ; the veins streaked with whitish ; short black fasciæ from base below costa and cell and above inner margin ; antemedial line black, interrupted, defined by a grey-white band on inner side, oblique, angled outwards below costa and strongly above inner margin ; claviform moderate, defined by black ; orbicular and reniform white incompletely defined by black,

Fig. 132.—*Blepharidia grumi*, ♂. ½.

the former small, with brownish centre, somewhat oblique elliptical ; traces of an oblique medial line from cell to inner margin ; postmedial line indistinctly double filled in with grey and with the area beyond it grey, bent outwards below costa, then minutely waved, excurved to

vein 4, then incurved; subterminal line represented by a series of slight yellowish-white lunules, defined on inner side below costa and at middle by small dentate dark marks, angled outwards at vein 7 and inwards at discal and submedian folds, dentate to near termen at veins 4, 3, the area beyond it brown; a terminal series of slight black lunules; cilia greyish with a brown line through them. Hind wing reddish brown, the terminal area rather darker; cilia whitish with a brown line near base; the underside paler, with black discoidal lunule and terminal brown band.

♀. Much darker; fore wing with the veins not streaked with white, the grey before antemedial and beyond postmedial line dark purplish; the subterminal whitish line prominent and entire.

Hab. Tibet, Kuku Noor, 1 ♂, 1 ♀. *Exp.* ♂ 30, ♀ 26 millim.

Sect. III. Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the costal area ochreous white ..... *costalis.*
B. Fore wing with the costal area concolorous.
a. Fore wing with ochreous-white fascia on median nervure ..... *anachoretoides.*
b. Fore wing without ochreous-white fascia on median nervure.
a^1. Fore wing with the orbicular oblique oblong ..... *paspa.*
b^1. Fore wing with the orbicular round.
a^2. Fore wing with the lines not defined by whitish *lama.*
b^2. Fore wing with the lines defined by whitish ... *dianthœcina.*

2581. Blepharidia costalis. (Plate CV. fig. 15.)

Penicillaria costalis, Butl. A. M. N. H. (5) iv. p. 367 (1879).

♀. Head and tegulæ ochreous white; palpi black-brown; frons with lateral black-brown bars; tegulæ with lateral black spots and grey-brown tips; thorax grey-brown; pectus and tibiæ with some ochreous; tarsi with slight pale rings; abdomen grey-brown, the ventral surface ochreous irrorated with brown. Fore wing grey-brown; costal area ochreous white, extending at base to the black streak in base of submedian fold, then running obliquely to subcostal nervure and a point at apex; subbasal line represented by black points on subcostal and median nervures; antemedial line obsolete on costal area, then slightly defined by ochreous on inner side, slightly waved and oblique; orbicular and reniform represented by a V-shaped ochreous-white mark slightly defined by black and connected with the costal fascia, the inner arm narrower, the outer with two fine curved brown lines on it; postmedial line obsolete on costal area, then slightly defined by ochreous on outer side and minutely waved, incurved below vein 4; subterminal line indistinct, waved, with slight white point beyond it below vein 7 and some reddish-ochreous suffusion before it at middle, excurved at middle and incurved in submedian interspace; a fine waved dark terminal line and fine pale line at base of cilia. Hind wing greyish suffused with brown, the terminal area rather darker; a large dark discoidal lunule; a waved dark terminal line; cilia ochreous whitish; the

underside whiter, the costal area tinged with ochreous, the terminal area irrorated with brown, discoidal lunule black, an obliquely curved postmedial line and terminal series of black lunules.

Hab. Japan, Yokohama (*Pryer*), 2 ♀ type. *Exp.* 36 millim.

*2582. Blepharidia anachoretoides.

Heliophobus anachoretoides, Alph. Hor. Ent. Soc. Ross. xxvi. p. 447 (1892); id. Rom. Mém. ix. p. 23. pl. 1. f. 6; Staud. Cat. Lep. pal. p. 177.

Head, thorax, and abdomen fuscous brown mixed with ochreous. Fore wing fuscous-brown with ochreous streaks on the veins; subbasal line represented by a dark striga from costa; antemedial line absent; claviform small, defined by black; orbicular and reniform yellowish white defined by black, the former round, the latter angled inwards and emitting a fascia on median nervure confluent with orbicular and extending to base; postmedial line ochreous, bent outwards below costa, excurved to vein 4, then oblique; subterminal line ochreous, defined on inner side by a dark patch below costa, slightly excurved below vein 7 and at middle; a terminal series of dark striæ and a fine line near base of cilia. Hind wing ochreous tinged with brown, the terminal area suffused with brown; a curved postmedial line; cilia ochreous; the underside yellowish brown.

Hab. Tibet, Kuku Noor. *Exp.* 32 millim. This species is unknown to me.

2583. Blepharidia paspa. (Plate CV. fig. 16.)

Trigonophora grumi, Alph. Hor. Ent. Soc. Ross. xxvi. p. 449 (1892), nec p. 447; id. Rom. Mém. ix. p. 29, pl. 1. f. 8; Staud. Cat. Lep. pal. p. 184.
Blepharidia paspa, Püng. Iris, xiii. p. 123 (1900).

Head and thorax red-brown; tarsi dark brown with pale rings; abdomen ochreous brown. Fore wing red-brown, the postmedial area brownish ochreous; subbasal line double, waved, from costa to submedian fold, with a greyish patch beyond it above vein 1, with black streak below it above inner margin; antemedial line double, filled in with greyish, oblique, slightly waved, bent inwards to inner margin; claviform small, defined by black; orbicular and reniform small, with brown centres and whitish annuli defined by black, the former oblique, rather oblong, the latter narrow, open above and below; an indistinct medial line oblique from costa to lower angle of cell; postmedial line indistinctly double, filled in with ochreous, bent outwards below costa, then minutely waved, very oblique below vein 4, some whitish points beyond it on costa; subterminal line whitish, defined on inner side by a dark patch at costa and slight somewhat dentate marks at middle, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of slight dark lunules; cilia with pale rufous line at base and intersected with rufous. Hind wing reddish brown tinged with fuscous; a medial dark line

and indistinct diffused subterminal band; the underside greyer with small discoidal lunule.

Hab. Tibet, Kuku Noor, types †♂ ♀ in Coll. Püngeler, Gyangtse (*Walton*), 1 ♂; Kashmir, Kuijar (*McArthur*), 1 ♂, 1 ♀. *Exp.* 38 millim.

2584. Blepharidia lama.

Heliophobus lama, Püng. Iris, xii. p. 293, pl. 9. f. 8 (1899); Staud. Cat Lep. pal. p. 177.

♂. Head, thorax, and abdomen dark brown mixed with grey; tarsi with pale rings. Fore wing dark brown glossed with grey and slightly irrorated with whitish; a patch of green scales above vein 1 near base with some black scales on its inner edge: subbasal line represented by slight black striæ from costa and cell; antemedial line oblique, waved; claviform moderate, defined by black; orbicular and reniform with brown centres and white annuli defined by black, the former round, the latter rather narrow; traces of a

Fig. 133.—*Blepharidia lama*, ♂. ½.

waved medial line; postmedial line indistinctly double, bent outwards below costa, then dentate, incurved below vein 4, some white points beyond it on costa; subterminal line whitish, interrupted in places, with slight dentate brown marks before it at middle, angled outwards at vein 7 and excurved at middle; cilia intersected with white. Hind wing fuscous brown; cilia yellowish at base, with brown line through them and whitish tips; the underside grey irrorated with brown, a discoidal lunule, curved postmedial line and traces of subterminal line.

Hab. Tibet, Kuku Noor, 1 ♂. *Exp.* 38 millim.

2585. Blepharidia dianthœcina. (Plate CV. fig. 17.)

Hadena dianthœcina, Staud. Iris, viii. p. 323 (1895); id. Cat. Lep. pal. p. 173.
Apamea montana, Leech, Trans. Ent. Soc. 1900, p. 61.

♂. Head and thorax olive-brown mixed with some grey and black; tarsi with whitish rings; abdomen grey-brown. Fore wing olive-brown with a golden gloss; some yellow and white scaling below base of cell and short blackish fasciæ from base above vein 1 and inner margin; the subbasal line represented by a black striga from costa defined by white on outer side; antemedial line defined by white on inner side, oblique, sinuous, angled outwards below costa and above inner margin and inwards on vein 1; claviform

moderate, defined by black; orbicular and reniform white defined by black and with small brown centres, the former round; an indistinct waved medial line from cell to inner margin; postmedial line double filled in with white, bent outwards below costa, then dentate, excurved to vein 4, then incurved, a diffused white patch beyond it above inner margin and some white points on costa; subterminal line white, defined on inner side by slight dentate black marks below costa and at middle, somewhat angled outwards at vein 7 and dentate to near termen at veins 4, 3; a terminal series of black lunules; cilia intersected with white and with fuscous line through them. Hind wing brown with an olive tinge; traces of a whitish postmedial line; a fine dark terminal line; cilia pale with a brown line through them: the underside pale with black discoidal lunule, curved postmedial line, and diffused subterminal band.

♀. Darker, with more black scaling and fuscous suffusion.

Hab. Tibet, Kuku Noor, 1 ♂, 1 ♀, Amdo; W. China, Ta-chien-lu, 1 ♂, type *montana*. *Exp.* 36 millim.

Sect. IV. Antennæ of male ciliated.

A. Fore wing black with white and rufous markings ..... *conspicua.*
B. Fore wing rufous with the terminal area grey ..... *griseirufa.*

2586. Blepharidia conspicua. (Plate CV. fig. 18.)

Polia conspicua, Leech, Trans. Ent. Soc. 1900, p. 94.

♂. Head and thorax black-brown mixed with a few white scales; palpi white on inner side; frons with lateral white patches: abdomen with tufts of white hair from basal joint; pectus clothed with whitish hair; tibiæ at extremities, the spurs and tarsal joints ringed with white; abdomen dark brown, whitish at base. Fore wing black-brown slightly irrorated with white scales; subbasal line represented by diffused whitish patches from costa and cell, with a brownish-white streak from its lower extremity to the antemedial line which is represented by an oblique white bar from costa, a bar from cell and a short streak on inner margin slightly bent upwards at extremity; two white points above middle of inner margin; claviform absent; orbicular and reniform white with slight brown centres, the former small, oblique elliptical, the latter elliptical; postmedial line black slightly defined by greyish on outer side, with white bar at costa, white bar in submedian interspace followed by a brown spot and white spot at inner margin, bent outwards below costa, then minutely dentate, excurved to vein 4, then oblique, some white beyond it on costa; subterminal line represented by a small white spot below costa, dentate white marks tinged with brown on inner side above and below veins 6 and 4, a bar in submedian interspace and small spot on inner margin; a terminal series of slight white striæ; cilia chequered black-brown and white. Hind wing dark brown, the base pale; some whitish on termen towards tornus; cilia brown intersected with white; the underside

yellowish white, the costal and terminal areas suffused with brown, the costal area irrorated with a few white scales, a black discoidal spot, curved postmedial line, and some whitish on termen from vein 5 to tornus.

Hab. W. China, Ta-chien-lu (*Pratt*), 1 ♂ type. *Exp.* 38 millim.

2587. Blepharidia griseirufa.

Polia griseirufa, Hmpsn. Moths Ind. ii. p. 233 (1894).

Head and thorax cupreous-rufous; tarsi brown with pale rings; abdomen greyish tinged with rufous. Fore wing cupreous-red slightly mottled with grey, the terminal area grey-white irrorated with fuscous; an indistinct pale waved subbasal line from costa to submedian fold; antemedial line indistinctly double filled in with grey, curved; orbicular and reniform very small, slightly defined by brown, the former rather oblique elliptical, the latter with pure white spot in centre; traces of a waved medial line; postmedial line indistinctly double filled in with grey, bent outwards below costa, excurved to vein 4, then oblique, some pale points beyond it on costa; subterminal line only defined by the difference between

Fig. 134.—*Blepharidia griseirufa*, ♂. ½.

the cupreous and grey areas, angled outwards at veins 7, 6, 4, 3, and incurved at discal fold and below vein 3; a terminal series of slight dark points; cilia cupreous-red. Hind wing greyish suffused with brown and with a silky gloss; the underside greyer suffused and irrorated with brown on costal and terminal areas, a blackish discoidal lunule and sinuous postmedial line.

Hab. Sikhim Tibet, Yatong (*Hobson*), 1 ♀; Sikhim, 10,000′, type † in Coll. Elwes; Bhutan (*Dudgeon*), 1 ♂. *Exp.* 26 millim.

Genus **TRICHORIDIA**, nov.

Type, *T. herclatra*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with hair in front; frons smooth; eyes large, rounded; antennæ of female ciliated: head and thorax clothed with hair only, the vertex of head crested, the prothorax with spreading crest; pectus and legs fringed with long hair; abdomen with dorsal crest at base only and lateral fringes of hair. Fore wing with the apex rather produced and acute, the termen crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

A. Fore wing with the ante- and postmedial lines white, meeting at inner margin ..... *fulminea.*
B. Fore wing with the ante- and postmedial lines not white, separate at inner margin.
a. Fore wing with the orbicular and reniform confluent with a pale mark on median nervure ..... *junctura*
b. Fore wing with the orbicular and reniform separate.
a^1. Fore wing with the postmedial line not dentate..... *endroma.*
b^1. Fore wing with the postmedial line dentate.
a^2. Fore wing with rufous fascia on inner margin ..... *hampsoni.*
b^2. Fore wing without rufous fascia on inner margin.
a^3. Fore wing without yellow or white lunules on subterminal line.
a^4. Fore wing without white marks on reniform.
a^5. Fore wing rufous ..... *dentata.*
b^5. Fore wing deep purplish grey ..... *canosparsa.*
b^4. Fore wing with white lunule on reniform ..... *albiluna.*
c^4. Fore wing with white annulus to reniform..... *cuprescens.*
b^3. Fore wing with white lunules on subterminal line *sichimensis.*
c^3. Fore wing with yellow lunules on subterminal line *herchatra.*

2588. **Trichoridia fulminea.** (Plate CV. fig. 19.)

Eurois fulminea, Leech, Trans. Ent. Soc. 1900, p. 94.

♀. Head and thorax deep chestnut-red; antennæ white at base; pectus and legs paler red, the tarsi brownish with slight pale rings; abdomen ochreous suffused with fuscous leaving pale segmental lines, the ventral surface pale red. Fore wing deep chestnut-red, the costal, inner, and terminal areas suffused with greyish; antemedial line pure white, extremely oblique from just below costa to inner margin at postmedial line; orbicular and reniform large, greyish, ill-defined, almost confluent below, the former rounded, the latter oblique oblong, some deep chestnut in cell before and between them; postmedial line pure white, very oblique from costa to above vein 4 near termen, then strongly incurved to inner margin at antemedial line; cilia rather paler rufous with a fine greyish line at base. Hind wing ochreous suffused with fuscous brown; cilia pale rufous; the underside yellowish suffused and irrorated with red, a small discoidal spot and sinuous postmedial line.

Hab. W. China, Ta-chien-lu (*Pratt*), 1 ♀ type. *Exp.* 42 millim.

2589. **Trichoridia junctura.**

Polia junctura, Hmpsn. Moths Ind. ii. p. 234 (1894).

Head and thorax bright red-brown mixed with a few white hairs; antennæ ochreous; pectus and legs ochreous brown, the tarsi brown with pale rings; abdomen ochreous suffused with rufous except at base. Fore wing bright red-brown, the basal and terminal areas suffused with purplish grey and irrorated with white scales; subbasal line red-brown, from costa to submedian fold; antemedial line very oblique from costa to above inner margin, then strongly retracted, the inner margin beyond it ochreous; claviform absent; orbicular and reniform ochreous slightly tinged with rufous, the

former narrow, oblique elliptical, the latter a rather narrow lunule with its extremities produced, angled inwards along median nervure to before the orbicular with which it is confluent, extending to well below median nervure and with its lower edge dentate on vein 2, the cell before and between them, the areas beyond and below the reniform suffused with black-brown; postmedial line indistinctly double filled in with greyish, strongly bent outwards below costa, then obliquely incurved to vein 4 near subterminal line, then very oblique; subterminal line red-brown, indistinctly double filled in

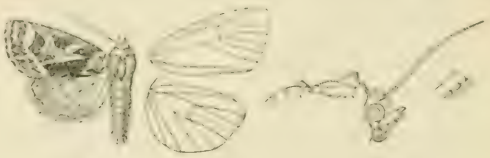


Fig. 135.—*Trichoridia junctura*, ♂. ½.

with greyish, angled outwards to tornen at veins 4, 3, 2, the area beyond it red-brown on inner half; a slightly waved brown terminal line; cilia rufous with a fine white line near tips. Hind wing ochreous, the terminal half suffused with brown; an indistinct discoidal spot and curved postmedial line; cilia ochreous tinged with rufous; the underside with the terminal half suffused with red-brown, the discoidal lunule and postmedial line more distinct.

Hab. Sikhim Tibet, Yatong (*Hobson, Bingham*), 8 ♂, 1 ♀: Sikhim, 7000′, type in Coll. Elwes. *Exp.* 30–32 millim.

2590. Trichoridia endroma. (Plate CV. fig. 20.)

Crymodes endroma, Swinh. A. M. N. H. (6) xii. p. 259 (1893); Hmpsn. Moths Ind. ii. p. 232.

♀. Head and thorax bright rufous; pectus, legs, and abdomen ochreous tinged with rufous. Fore wing bright rufous, the basal and postmedial areas irrorated with silvery purple, the medial and terminal areas with a few silvery purple scales; subbasal line represented by a silvery purple striga from costa; antemedial line indistinctly double filled in with silvery purple, oblique from costa to above inner margin to which it is strongly retracted; claviform absent; orbicular and reniform indistinct, with slight ochreous annuli defined by rufous, the former oblique elliptical, the latter angled inwards on median nervure; postmedial line indistinctly double filled in with silvery purple, bent outwards below costa, oblique to vein 5, then inwardly oblique; an indistinct rather strongly dentate subterminal line. Hind wing ochreous slightly tinged with brown, an indistinct discoidal spot, curved postmedial line, and diffused subterminal band; cilia bright rufous; the underside paler irrorated with brown, the markings distinct or almost obsolete.

Ab. 1. Fore wing with hardly any silvery purple irroration on basal and postmedial areas.

Ab. 2. Head and thorax ochreous tinged with rufous; fore wing with the orbicular and reniform and the area beyond the postmedial line ochreous tinged with rufous.

Hab. Sikhim Tibet, Yatong (*Hobson*), 4 ♀; Sikhim (*Möller, Elwes*), 5 ♀; Bhutan (*Dudgeon*), 1 ♀. *Exp.* 36–40 millim.

2591. Trichoridia hampsoni. (Plate CV. fig. 21.)

Eurois hampsoni, Leech, Trans. Ent. Soc. 1900, p. 93.

Head and thorax deep red-brown mixed with a few white hairs; antennæ ochreous; tarsi with slight ochreous rings; abdomen ochreous suffused with red-brown. Fore wing reddish brown, the medial area suffused with black-brown except towards costa, the basal, postmedial, terminal and costal areas and veins irrorated with blue-white scales; subbasal line black defined by rufous on outer side, from costa to submedian fold, with a slight dark streak beyond its lower extremity; antemedial line blackish defined by rufous on inner side, oblique from costa to above inner margin, to which it is strongly retracted, the inner margin beyond it ochreous suffused with orange-red; orbicular with pale brown centre irrorated with blue-white scales and slight rufous annulus defined by black; reniform with rufous and brown centre slightly irrorated with bluish-white and rufous annulus defined by black, a rather narrow lunule with its extremities produced, angled inwards on median nervure to the orbicular; postmedial line black defined by rufous on outer side, bent outwards below costa, then minutely dentate, oblique below vein 4; subterminal line indistinctly double, dark brown filled in with rufous, angled inwards below veins 5, 4, 3, where there are black dentate marks beyond it from termen; a fine lunulate black terminal line; cilia dark brown with yellowish line at base and slight whitish line near tips. Hind wing ochreous, the terminal half suffused with brown, in female nearly uniformly suffused; a fine waved dark terminal line; cilia fulvous-yellow with a few dark scales; the underside greyish thickly irrorated with brown, a discoidal lunule and diffused curved postmedial line showing through to upperside.

Hab. W. China, Omei-shan, 1 ♂, 1 ♀, Pu-tsu-Fang, 4 ♂, 5 ♀, type. *Exp.* 44 millim.

2592. Trichoridia dentata. (Plate CV. fig. 22.)

Polia dentata, Hmpsn. Moths Ind. ii. p. 233 (1894).

Head and thorax bright rufous mixed with a few white hairs; abdomen ochreous suffused with brown, the anal tuft and ventral surface fulvous. Fore wing bright rufous, the basal and postmedial areas suffused with blue-grey: subbasal line represented by slight brown striæ from costa and cell; antemedial line double filled in with

grey, the inner line indistinct, acutely angled outwards below costa, excurved from subcostal nervure to above inner margin, to which it is strongly retracted; some dark brown suffusion on medial area above vein 1; claviform absent; orbicular and reniform irrorated with blue-grey and defined by brown, the former rather small, oblique elliptical, the latter a narrow lunule with its extremities produced, a dark line in centre, and placed on a patch of dark suffusion; postmedial line double, the outer line indistinct, bent outwards below costa, then minutely dentate, excurved to vein 4, then very oblique; subterminal line only defined by an oblique dark shade from costa before it and the area beyond it being red-brown, angled outwards at vein 7 and excurved at middle. Hind wing ochreous slightly suffused and irrorated with brown, a slight discoidal lunule, sinuous postmedial line, and diffused subterminal band: the underside bright ochreous slightly irrorated with brown, a slight discoidal lunule and indistinct sinuous postmedial line.

Hab. Sikhim Tibet, Yatong (*Hobson*), 1 ♀; Sikhim (*Möller, Elwes*), 2 ♂, 2 ♀; Bhutan (*Dudgeon*), 1 ♂, 1 ♀. *Exp.* 40 millim. Type † in Coll. Elwes.

2593. **Trichoridia canosparsa.** (Plate CV. fig. 23.)

Polia canosparsa, Hmpsn. Moths Ind. ii. p. 232 (1894).

♂. Head and thorax black mixed with white and a few yellow hairs; abdomen greyish suffused and irrorated with dark brown. Fore wing deep purplish grey irrorated with white scales, the interspaces with black fasciæ irrorated with yellow scales; subbasal line indistinct, oblique, waved; antemedial line slightly waved, nearly erect; claviform small, defined by black; orbicular and reniform rather small, purplish grey irrorated with white and yellow and indistinctly defined by black, the former oblique elliptical; postmedial line bent outwards below costa, then crenulate, excurved to vein 4, then incurved, the dark streaks in the interspaces interrupted beyond it; subterminal line represented by slight whitish lunules between the black streaks in the interspaces; a terminal series of black lunules; cilia black at base, chequered yellowish white and black at tips. Hind wing whitish tinged with brown, the veins and terminal half suffused with brown; a slight discoidal lunule and sinuous postmedial line; cilia yellowish white with dark line near base; the underside whitish, the costal and terminal areas irrorated with brown; a slight discoidal lunule, diffused sinuous postmedial line, and traces of diffused subterminal band.

Hab. Sikhim (*Möller, Elwes*), 4 ♂. *Exp.* 34–36 millim. Type † in Coll. Elwes.

2594. **Trichoridia albiluna**, n. sp. (Plate CV. fig. 24.)

♀. Head and thorax dark brown mixed with ochreous and a few white hairs; pectus with ochreous hair; tarsi ringed with yellow; abdomen grey-brown with the anal tuft fulvous. Fore wing dark

brown irrorated with blue-white scales except on medial area, where the costal area and veins only are irrorated; subbasal line represented by slight blackish marks below costa and cell; antemedial line double, the inner line indistinct, angled outwards below costa, excurved from cell to inner margin; claviform moderate, defined by black; orbicular irrorated with blue-white and defined by black, round; reniform defined by blackish and with ochreous white lunule on its outer edge; an indistinct waved medial line; postmedial line bent outwards below costa, then dentate, excurved to vein 4, then incurved, some white points beyond it on costa; subterminal line yellow-brown defined on each side by diffused black and with brown marks on its inner side below vein 7, angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules; cilia black mixed with ochreous and with slight black line through them. Hind wing ochreous brown with slight discoidal spot, sinuous postmedial line, and diffused subterminal band; cilia ochreous with a diffused black line near base; the underside brownish ochreous irrorated with brown, the terminal area suffused with brown, a small discoidal spot and rather diffused postmedial line excurved at median nervules, then incurved.

Hab. Sikhim Tibet, Yatong (*Hobson*), 2 ♀ type. *Exp.* 38 millim.

2595. **Trichoridia cuprescens**, n. sp. (Plate CV. fig. 25.)

♀. Head and thorax rufous; abdomen ochreous tinged with rufous. Fore wing cupreous-brown slightly suffused with purplish grey especially on basal and postmedial areas; subbasal line represented by a slight grey striga from costa; antemedial line indistinctly double filled in with grey, waved, rather oblique; claviform absent; orbicular very faint, with greyish centre defined by cupreous brown, small, round; reniform a narrow lunule with white annulus; postmedial line indistinctly double filled in with grey, bent outwards below costa, then dentate, oblique below vein 4; subterminal line only represented by the contrast between the greyish and cupreous areas; some whitish irroration on termen at extremity of veins. Hind wing ochreous white suffused with cupreous brown, the terminal area rather darker; cilia rufous, paler at tips; the underside greyish irrorated with brown, the costal area tinged with ochreous, a slight discoidal lunule, sinuous postmedial line, and faint subterminal line.

Hab. Sikhim Tibet, Yatong (*Hobson*), 1 ♀ type. *Exp.* 34 millim.

*2596. **Trichoridia sichimensis.** (Plate CV. fig. 26.)

Celæna sikkimensis, Moore, P. Z. S. 1881, p. 348, pl. 38. f. 16; Hmpsn. Moths Ind. ii. p. 232.

♂. Head and thorax black-brown mixed with some whitish hair; tarsi ringed with white; abdomen fuscous mixed with grey, the anal tuft tinged with ochreous. Fore wing purplish grey suffused

and irrorated with fuscous; subbasal line represented by double black spots below costa and cell; antemedial line black defined by purplish grey on inner side, oblique, interrupted below costa and angled outwards above inner margin; claviform moderate, defined by black; orbicular with slight whitish annulus defined by black, rather elongate elliptical; reniform white defined by black and with some black irroration in centre, narrow above and with its lower extremity produced; postmedial line rather indistinct, defined by greyish on outer side, bent outwards below costa, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line formed of white lunules defined on inner side by dentate black marks and with slight black marks on outer, slightly angled outwards at veins 7, 4, 3; a terminal series of small black lunules; cilia brownish white with black line near base. Hind wing whitish suffused and irrorated with brown especially on terminal area; a slight discoidal lunule, indistinct sinuous postmedial line, and diffused whitish subterminal band; cilia brownish white with dark line near base; the underside ochreous, the costal and terminal areas irrorated with brown, a dark discoidal lunule, sinuous postmedial line, and diffused subterminal band.

Hab. Sikhim Tibet, Chumbi Valley, in Coll. Elwes. *Exp.* 34 millim.

2597. Trichoridia herchatra. (Plate CV. fig. 27.)

Crymodes herchatra, Swinh. A. M. N. H. (6) xii. p. 260 (1893); Hmpsn. Moths Ind. ii. p. 231.

Head and thorax black mixed with white and yellow hairs; palpi yellow on inner side; pectus and legs mostly yellow, the tarsi black ringed with yellow; abdomen greyish mixed with brown, the anal tuft yellow. Fore wing black-brown irrorated with golden yellow, the veins purplish grey irrorated with white; subbasal line represented by small black spots below costa and cell, defined by golden yellow on outer side and with yellow patch above vein 1; antemedial line indistinct, black defined by grey and white on inner side, oblique, slightly waved; claviform small, defined by black; orbicular and reniform small, the former with greyish centre irrorated with white and slight yellow annulus defined by black, oblique elliptical, the latter narrow with black centre and yellow annulus defined by black, open above and below; an indistinct medial line oblique from costa to lower angle of cell, then incurved; postmedial line black defined by grey and white on outer side, bent outwards below costa, then dentate, excurved to vein 4, then incurved; subterminal line formed of golden-yellow striæ on black spots, angled outwards at veins 7, 4, 3; cilia brown and yellow intersected with yellow and with slight waved black line through them. Hind wing ochreous tinged with brown, the veins and terminal area suffused with brown; a slight discoidal lunule, sinuous postmedial line, and diffused subterminal band defined by whitish on outer side towards tornus; cilia golden yellow mixed with black; the underside pale

ochreous yellow, the costal and terminal areas irrorated with brown, a small discoidal lunule, and diffused sinuous postmedial line.

Hab. Punjab, 1 ♀; Sikhim Tibet, Yatong (*Hobson*), 2 ♂, 1 ♀; Sikhim (*Möller*, *Elwes*), 2 ♂, 7 ♀, type; Assam, Khásis. *Exp.* 36 millim.

Genus DASYSTERNUM.

	Type.
Dasysternum, Staud. Iris, viii. p. 327 (1895)	*tibetana.*

Proboscis fully developed; palpi upturned, the second joint reaching vertex of head and fringed with long hair in front, the third typically rather long; frons smooth; antennæ of male typically almost simple; head and thorax clothed with long hair and without crests; tibiæ fringed with hair; abdomen with dorsal crest on basal segment and some long hair on dorsum. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3 and 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with long branches, the apex simple.

A. Fore wing white irrorated with pale brown ..... *lea.*
B. Fore wing pale yellowish slightly irrorated with brown ..... *juditha.*
C. Fore wing ochreous suffused with pale red-brown ..... *bacheri.*

2598. Dasysternum lea.

Polia lea, Staud. Iris, x. p. 280, pl. 4. f. 18 (1897); id. Cat. Lep. pal. p. 179.

♂. Head and thorax white tinged with pale brown; palpi with some dark brown hair; fore tarsi banded with fuscous; abdomen white irrorated with brown. Fore wing white thickly irrorated with pale reddish brown; the costa with series of fuscous marks; traces of a waved subbasal line from costa to submedian fold; antemedial line defined by white on inner side, minutely waved, strongly angled inwards on vein 1; orbicular and reniform with ill-defined white annuli, the former round, the latter irregular and with traces

Fig. 136.—*Dasysternum lea*, ♂. ½.

of whitish spots on its outer edge; postmedial line bent outwards below costa, then dentate, excurved to vein 4, then incurved and angled outwards on vein 1, some white points beyond it on costa; subterminal line very indistinct, angled outwards at vein 7 and dentate at veins 4, 3; a terminal series of slight dark lunules; cilia chequered whitish and pale brown. Hind wing yellowish white, with diffused dark postmedial line angled outwards at vein 4; a terminal series of brown striæ.

Hab. Palestine, 1 ♂. *Exp.* 36 millim.

*2599. Dasysternum juditha. (Plate CV. fig. 28.)

Polia juditha, Staud. Iris, x. p. 276, pl. 4. f. 16 (1897); id. Cat. Lep. pal. p. 179.

♀. Head and thorax very pale yellowish; palpi and frons at sides with slight fuscous marks; abdomen ochreous white slightly irrorated with brown. Fore wing very pale yellowish slightly irrorated with brown; subbasal line very indistinct, brown, waved, from costa to submedian fold; antemedial line indistinct, double, slightly waved, oblique, with slight brown marks at costa; claviform very faintly defined by brown; orbicular and reniform yellowish, faintly defined, the former with brownish centre, round, the latter angled inwards on median nervure; postmedial line indistinctly double from costa to vein 5, bent outwards below costa, then dentate and produced to black points on the veins, incurved below vein 4, some slight pale points beyond it on costa; subterminal line indistinct, pale, slightly defined by brown on inner side, dentate, somewhat angled outwards at vein 7 and excurved at middle. Hind wing ochreous white slightly tinged with brown; cilia yellowish white; the underside nearly pure white.

Hab. Palestine, Ain-Dschidi, in Coll. Püngeler. *Exp.* 44 millim.

*2600. Dasysternum bacheri. (Plate CV. fig. 29.)

Epunda bacheri, Püng. Iris, xiv. p. 332 (1901), & xv. pl. vi. f. 25.

♂. Head and thorax pale rufous; palpi dark brown at sides; frons with dark brown bar above; tarsi brown ringed with ochreous white; abdomen ochreous white dorsally suffused with pale rufous. Fore wing ochreous suffused with pale red-brown; subbasal line absent; antemedial line indistinct, double, waved, with darker brown band on its outer side except at costa, on inner area extending to postmedial line; orbicular and reniform slightly defined by brown, the former small, round, the latter open above, constricted at middle and with some brown on lower part; postmedial line brown defined by somewhat paler colour on outer side and with brown suffusion on inner side from costa to vein 2, bent outwards below costa, then minutely dentate, excurved to vein 4, then oblique, some slight pale points beyond it on costa; subterminal area represented by two slight dentate brown marks below costa and three at middle; a terminal series of minute dark lunules; cilia ochreous with a diffused dark line through them. Hind wing ochreous white with slight curved brown postmedial line, diffused subterminal band, and fine waved terminal line; cilia ochreous with a brown line through them; the underside whitish, the costal and terminal areas suffused with pale reddish brown.

Hab. Palestine, Petra, type† ♂ in Coll. Püngeler. *Exp.* 40 millim.

Sect. II. Antennæ of male serrate and fasciculate.

A. Fore wing whitish suffused or irrorated with fuscous.
  a. Fore wing with the postmedial area darker than the medial area ..... *hæretica*.
  b. Fore wing with the postmedial area paler than the medial area ..... *anceps*.
B. Fore wing greyish thickly irrorated and striated with red-brown ..... *eristica*.

2601. Dasysternum hæretica. (Plate CV. fig. 30.)

Polia hæretica, Püng. Iris, xv. p. 153, pl. v. f. 12 (1902).

♂. Head and thorax brownish white; palpi blackish at sides; pectus and legs irrorated with fuscous, the tarsi banded with black; abdomen brownish white dorsally tinged with fuscous. Fore wing brownish white irrorated with fuscous; subbasal line represented by black points below costa and cell; antemedial line rather indistinct, oblique, waved; claviform represented by a few black scales; orbicular and reniform defined by black, slightly open above and below, the former round, some fuscous suffusion between and beyond them; postmedial line indistinctly double, oblique from costa to vein 6, then minutely dentate, excurved to vein 4, then oblique, some fuscous suffusion beyond it to the subterminal line which is not otherwise defined, slightly angled outwards at vein 7 and excurved at middle; a fine dark terminal line. Hind wing white slightly irrorated with brown; a fine dark terminal line; the underside with discoidal point and indistinct curved postmedial line.

Hab. W. Turkestan, Askabad, 1 ♂. *Exp.* 36 millim. Type† ♂ in Coll. Püngeler.

2602. Dasysternum anceps.

Polia anceps, Staud. Iris, x. p. 277, pl. 4. f. 17 (1897); id. Cat. Lep. pal. p. 179.

Head and thorax ochreous white mixed with fuscous; palpi fuscous at sides except 3rd joint, tarsi with slight fuscous bands abdomen ochreous white dorsally suffused with fuscous. Fore wing

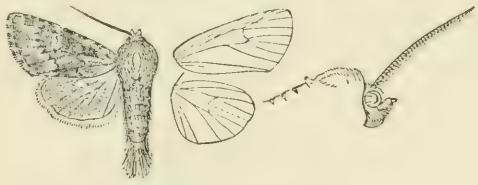


Fig. 137.—*Dasysternum anceps*, ♂. ½.

dirty white irrorated with fuscous and suffused in parts with fuscous especially on medial and terminal areas; some fuscous suffusion on basal costal area, traces of a subbasal line from costa to submedian

fold, angled inwards in cell; an indistinct waved antemedial line angled inwards on vein 1; orbicular and reniform with very ill-defined pale annuli, the former rounded, the latter irregular, with traces of whitish spots on its outer edges and somewhat angled inwards on median nervure; postmedial line indistinct, bent outwards below costa, then dentate and produced to dark points on the veins, oblique below vein 4, some pale points beyond it on costa; subterminal line only defined by a dark patch before it on costa and the area beyond it being slightly darker, angled outwards at vein 7 and excurved at middle; cilia chequered yellowish white and fuscous. Hind wing yellowish white tinged with fuscous especially on terminal area, in female uniformly suffused except costal area; cilia yellowish; the underside whitish, with small discoidal spot and diffused postmedial line.

Hab. Syria, Lebanon (*Pratt*), 1 ♀; Palestine, 1 ♂. *Exp.* 38 millim.

*2603. Dasysternum eristica. (Plate CV. fig. 31.)

Dasysternum eristicum, Püng. Iris, xix. p. 94 (1906).

♂. Head, thorax, and abdomen red-brown mixed with greyish; palpi fuscous at sides; tarsi fuscous with pale rings. Fore wing greyish thickly irrorated and striated with red-brown; subbasal line represented by a black striga from costa defined by whitish on outer side beyond which is some blackish suffusion; antemedial line represented by two blackish marks on costa with some whitish between them and a slight oblique striga above inner margin; orbicular and reniform small, pale, very indistinct and ill-defined, the former somewhat oblique elliptical; postmedial line represented by two blackish marks on costa with some whitish between them, then very indistinct, bent outwards below costa, excurved to vein 4, then very oblique, some whitish points beyond it on costa; subterminal line pale with patch of brown suffusion before it on costa, then hardly traceable, incurved below vein 3; a slight waved brown terminal line; cilia whitish intersected with brown and with slight brown line through them. Hind wing reddish brown with traces of discoidal spot, curved postmedial line, and diffused subterminal band; cilia whitish tinged with brown; the underside pale tinged with rufous and irrorated with brown, a dark discoidal lunule and rather diffused curved postmedial line.

Hab. Mongolia, Aksu, type † ♂ in Coll. Püngeler. *Exp.* 34 millim.

Sect. III. Antennæ of male almost simple.

2604. Dasysternum tibetana.

Dasysternum tibetanum, Staud. Iris, viii. p. 327, pl. 6. f. 9 (1895); id. Cat. Lep. pal. p. 180.

Head and thorax blue-grey mixed with olive-brown; antennæ blackish; tarsi blackish with pale rings; abdomen blue-grey mixed

with fuscous brown. Fore wing blue-grey thickly irrorated and suffused with olive-fuscous; faint traces of a subbasal line; an indistinct double, waved, antemedial line; orbicular and reniform pale, very ill-defined, the former somewhat triangular, the latter slightly angled inwards on median nervure; a very indistinct medial shade; postmedial line defined by pale grey on outer side, bent outwards below costa, then irregularly dentate, incurved at discal

Fig. 138.—*Dasysternum tibetana*, ♂. ½.

fold, oblique below vein 4 and angled inwards in submedian fold; traces of a subterminal line slightly excurved at vein 7 and middle; a terminal series of slight black lunules; a fine pale line at base of cilia. Hind wing fuscous brown; cilia white; the underside grey irrorated with brown, traces of a diffused postmedial line.

Hab. Tibet, Kuku Noor, 1 ♂, Amdo; W. China, Ta-chien-lu, 8300′ (*Pratt*), 1 ♀. *Exp.* 40 millim.

Genus **HYPNOTYPE**, nov.

Type, *H. placens*.

Proboscis fully developed; palpi upturned, fringed with hair in front; frons smooth; eyes large, rounded; head and thorax clothed almost entirely with scales, the tegulæ produced to a slight dorsal ridge, the pro- and metathorax with spreading crests; tibiæ thickly scaled; abdomen without crests. Fore wing with the termen evenly curved; veins 3 and 5 from close to angle of cell; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2605. Hypnotype placens.

Diphthera placens, Wlk. xi. 708 (1857).

♀. Head and thorax white mixed with black scales; sides of palpi and frons mostly black; tegulæ pale olive at base shading into rufous and with white tips; tibiæ and tarsi banded black and white; abdomen dirty white irrorated with fuscous. Fore wing white tinged with olive-fuscous; the costa with series of small black spots; an ill-defined black streak below base of cell forking at extremity where it is met by an oblique striga from cell; subbasal line from costa to basal streak, angled outwards below costa; an antemedial black line forming two spots below costa, oblique and waved to submedian fold, then strongly retracted with a white mark in angle with black spot before it and greenish-black mark below the retracted part, then double, the inner line bent inwards as a short black streak above inner margin, the outer angled outwards to inner margin; claviform represented by a rather heart

shaped white mark between cell and angle of antemedial line, defined by black on outer side; orbicular and reniform white with greyish centres and defined by black, the former rather small, round, the latter narrow, open above and somewhat angled inwards on median nervure, a greenish-black patch and black streak between them in cell; postmedial line bent outwards below costa, then

Fig. 139.—*Hypnotype placens*, ♀. ½.

dentate, oblique below vein 4; subterminal line represented by two dentate black marks below costa and a series of dentate and lunulate marks just before termen from vein 6 to tornus, largest at middle and above tornus; cilia grey mixed with white and fuscous. Hind wing white, the costal area and termen and veins of terminal area brown; cilia white with brown line through them from apex to vein 2: the underside with postmedial series of short brown streaks on the veins showing through to upperside.

Hab. Colombia, Bogotá (*Stevens*), 1 ♀ type. *Exp.* 46 millim.

Genus **SYMPISTIS**.

Type.

Sympistis, Hübn. Verz. p. 261 (1827) ..... *nebulosa*.

Proboscis fully developed; palpi upturned, the 2nd joint fringed with long hair in front, the 3rd small; frons smooth; eyes small, reniform; antennæ of male typically minutely ciliated; head and thorax clothed with rough scales and hair and without crests; pectus and legs clothed with long hair; abdomen clothed with long hair and without crests. Fore wing short, triangular, the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male with fasciculate cilia.

A. Fore wing with triangular black mark on basal inner area containing a hooked ochreous-white mark ..... *pessota*.
B. Fore wing without black patch and white mark on basal inner area.
  a. Fore wing with prominent black-brown postmedial band ..... *iota*.
  b. Fore wing without postmedial band ..... *fortis*.

*2606. ?Sympistis pessota.

Miselia pessota, Meyr. Trans. N. Z. Inst. xix. p. 29 (1886); Hudson, N. Zealand Moths & Butterflies, p. 6, pl. v. f. 26.

♂. Head deep fuscous; thorax deep fuscous irrorated with white; tegulæ ochreous brown with a black transverse line; abdomen

greyish, the anal tuft ochreous white; legs fuscous ringed with whitish. Fore wing deep fuscous slightly tinged with purple, irrorated with a few ochreous-white scales; a black acute triangular mark on basal inner area containing a hooked ochreous-white mark; the lines indistinct, pale; claviform represented by a short ochreous-white mark; orbicular moderate, round, with whitish annulus; reniform ochreous white defined on inner side by fuscous, then by pale ochreous and with a blackish quadrate spot between it and orbicular; subterminal line hardly traceable; a terminal series of slight whitish points; cilia fuscous. Hind wing deep fuscous, the cilia whitish at tips.

Hab. N. Zealand, Christchurch, Wellington, Canterbury, Lake Coleridge, Rakaia. *Exp.* 26 millim. This species is unknown to me.

*2607. Sympistis iota.

Miselia iota, Hudson, Tr. N. Z. Inst. xxxv. p. 243, pl. xxx. f. 3 (1903).

Head and thorax brownish ochreous; tegulæ with two prominent black marks; abdomen grey. Fore wing brownish ochreous irrorated with black; subbasal line prominent, black, forming a strong hook outwards in submedian interspace; antemedial line forming a wedge-shaped black mark on costal area, then slightly sinuous; a diffused waved medial line, darker at costa; a wedge-shaped black mark on costa beyond middle with traces of a postmedial line arising from it; the postmedial area with a black-brown band, broader towards costa, its inner edge sinuous and defined on outer side by the pale waved subterminal line; cilia brownish ochreous. Hind wing dark brownish black, the cilia dark grey.

Hab. N. Zealand, Korori, Invercargill. *Exp.* about 26 millim. This species is unknown to me.

2608. Sympistis fortis.

Toxocampa fortis, Butl. Cist. Ent. ii. p. 549 (1880).

♂. Head and thorax dark brown mixed with grey; tegulæ with strong black medial line; abdomen grey dorsally suffused with fuscous. Fore wing brownish grey suffused and irrorated with

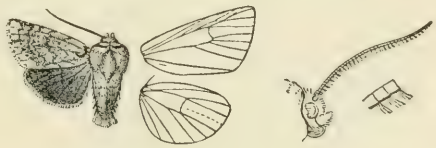


Fig. 140.—*Sympistis fortis*, ♂. ½.

fuscous brown; a strong black subbasal line from costa to submedian fold where it is bent outwards and forms a short fascia; antemedial line indistinct, oblique and stronger at costa, angled inwards in cell and on vein 1, excurved in submedian interspace

and above inner margin; orbicular and reniform small with some fuscous in centres and slight greyish annuli slightly defined by black, the former round; medial shade indistinct, oblique from costa to lower angle of cell, then waved; postmedial line black, excurved, minutely waved, incurved in submedian interspace; subterminal line indistinct, dark, slightly waved, excurved at middle and incurved below vein 3, the area beyond it paler brown; a terminal series of slight black lunules. Hind wing deep fuscous brown; the underside pale brownish grey thickly irrorated with black, a black spot in cell near base, a large discoidal lunule and curved diffused postmedial line.

Hab. N. Zealand, Marlborough Province (*Skellon*), 1 ♂ type. *Exp.* 32 millim.

Sect. II. Antennæ of male minutely ciliated.

A. Hind wing white with terminal black band, the base tinged with brown ..... *melaleuca.*
B. Hind wing black-brown.
a. Hind wing with broad medial white band extending to inner margin ..... *celloggi.*
b. Hind wing with postmedial white patch on costal area, sometimes extending to vein 2.
a^1. Fore wing largely irrorated with white ..... *lapponica.*
b^1. Fore wing slightly irrorated with white ..... *zetterstedti.*
c. Hind wing wholly black-brown above.
a^1. Fore wing wholly suffused with black-brown except terminal area ..... *nigrita.*
b^1. Fore wing with the medial area only suffused with black-brown ..... *fennica.*

2609. Sympistis melaleuca.

Noctua melaleuca, Thnbg. Diss. Ent. ii. p. 42, f. 12 (1791); Staud. Cat. Lep. pal. p. 218; Smith, Cat. Noct. N. Am. p. 292.
Noctua leucoptera, Esp. Schmett. iv. pl. 189. f. 3 (1796).
Noctua mæsta, Hübn. Eur. Schmett., Noct. f. 357 (1827); Dup. Lép. Fr. vii. p. 291, pl. 118. f. 3.
Anarta bicycla, Pack. Proc. Bost. Soc. N. H. xi. p. 41 (1867).

Head and thorax clothed with black and white hair and scales; tarsi with whitish rings; abdomen clothed with black-brown and

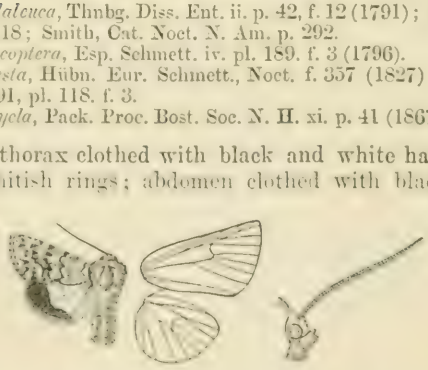


Fig. 141.—*Sympistis melaleuca*, ♂. ½.

white hair. Fore wing brown and black thickly irrorated with white; subbasal line double, waved, from costa to submedian fold; antemedial line single, oblique, waved, more strongly excurved in

cell; claviform faintly defined by black at extremity and with black streak from it to postmedial line; orbicular and reniform very small, white irrorated with black, the former rather elongate elliptical, the latter with dark centre, a black mark between them in cell; postmedial line bent outwards below costa, incurved at discal fold and strongly below vein 4, then again excurved, some white points beyond it on costa; subterminal line dark, angled outwards and forming blackish marks at vein 7 and middle, then incurved and with blackish mark on inner side in submedian fold; cilia chequered black and whitish. Hind wing pure white, tinged with brown at base; the terminal area black, rather broad at costa, narrowing to a point at tornus: cilia white, chequered with brown at base from costa to vein 2; the underside with the costa irrorated with brown, a small black discoidal lunule.

Hab. Canada, Labrador, 2 ♂, 1 ♀, Zeller, Frey, and Grote Colls.; Scandinavia, Finmark, Porsanger, Varanga, and Alten Fjords, Zeller and Frey Colls.; Lapland, Leech Coll.; Russia; N.E. Siberia. *Exp.* 26–28 millim.

Larva. Kirby, Butt. & Moths Eur. p. 265; Hffm. Raup. p. 137.

Dark chocolate-brown shaded with pale violet-grey at sides, sometimes forming a band; dorsal line yellow with oblique yellow streaks arising from it. Food-plant, *Empetrum nigrum*. G.

2610. **Sympistis celloggi.** (Plate CV. fig. 32.)

Anarta kelloggi, H. Edw. Proc. Cal. Ac. Sci. vi. p. 133 (1875); Smith, Cat. Noct. N. Am. p. 295.

♀. Head and thorax white mixed with black; tarsi black ringed with white; abdomen black-brown slightly mixed with grey. Fore wing white suffused and thickly irrorated with fuscous black; subbasal line represented by a slight striga from costa; antemedial line very indistinct, waved; orbicular hardly traceable and very small, with dark centre and pale annulus defined by black; reniform a diffused white patch extending to postmedial line with slight dark discoidal lunule on it and black spot at lower angle of cell; postmedial line defined by white on outer side, bent outwards below costa, excurved to vein 4, then incurved, and again excurved below submedian fold, some white points beyond it on costa; subterminal line white defined by black suffusion on inner side and with slight dentate black marks before it at middle, angled outwards at veins 7 and middle and incurved at discal and submedian folds; a terminal series of black lunules; cilia chequered white and black-brown with dark line near base. Hind wing black-brown with white medial band, broad at costa, narrowing towards inner margin which it does not reach, the veins and discoidal lunule on it dark; cilia white, dark at base; the underside with the costal area white irrorated with brown to terminal band.

Hab. U.S.A., California, Sierra Nevada, 1 ♀, Tuolumne Co. *Exp.* 30 millim.

2611. Sympistis lapponica.

Noctua lapponica, Thnbg. Diss. Ent. ii. p. 42. f. 10 (1791); Auriv. Bih. K. Vet.-Akad. Handl. xv. p. 19. pl. 2. f. 2; Staud. Cat. Lep. pal. p. 219; Smith, Cat. Noct. N. Am. p. 294.

Anarta amissa, Lef. Ann. Soc. Ent. Fr. 1836, p. 397, pl. 10. f. 6, ♂ (nec ♀); Dup. Lép. Fr. Suppl. iii. pl. 49. f. 7 *a*; Herr.-Schäff. Eur. Schmett., Noct. ii. 211–12.

Anarta tenebricosa, Möschl. Stett. ent. Zeit. 1877, p. 498.

Head and thorax black mixed with white; tarsi ringed with white; abdomen black-brown mixed with some white hairs. Fore wing white irrorated with black; subbasal line double, the outer line interrupted and diffused; antemedial line strong, black, waved, angled outwards in cell; orbicular and reniform very small, white, the former round with black before it in cell, the latter with black centre; outer half of medial area black; postmedial line black defined by white on outer side, bent outwards below costa, then minutely dentate, strongly incurved below vein 4; the postmedial area suffused with black with some white points on costa; subterminal line only defined by the contrast between the black and whitish areas, angled outwards at vein 7 and middle, then incurved; cilia chequered white and black-brown with series of black striæ at base. Hind wing black-brown with whitish patch on costal area beyond middle; cilia white, brownish at base. Underside of both wings black-brown with whitish band beyond the sinuous postmedial line.

Ab. 1. *tenebricosa*. Darker; fore wing not irrorated with grey.

Hab. Greenland (*Hollboel*), 1 ♀; Canada, Labrador (*Möschler*), 1 ♀, Br. Columbia, Kicking Horse Pass (*Mrs. Nicholl*), 1 ♀; Scandinavia, Finmark, Alten Fjord, Zeller Coll; Lapland, Leech Coll.; Novaya Zembla. *Exp.* 24–26 millim.

Larva. Kirby, Butt. & Moths Eur. p. 265; Hffm. Raup. p. 137.

Greyish or cinnamon-brown with a dorsal series of black spots; a pale lateral line and series of oblique lateral streaks. Food-plants: *Vaccinium* and Birch.

2612. Sympistis zetterstedti.

Anarta amissa, Lef. Ann. Soc. Ent. Fr. 1836, pl. 10. f. 7, ♀ (nec ♂); Dup. Lép. Fr. Suppl. iii. pl. 49. f. 7 *b*.

Anarta zetterstedtii, Staud. Stett. ent. Zeit. 1857, p. 294; Herr.-Schäff. Neue Schmett. f. 166; Staud. Cat. Lep. pal. p. 219; Smith, Cat. Noct. N. Am. p. 295.

Sympistis sibirica, Alph. Iris, viii. p. 195 (1895); id. Rom. Mém. ix. p. 220, pl. 10. f. 11.

Anarta kolthoffi, Auriv. Bih. K. Vet.-Akad. Handl. xv. p. 20, pl. 2. f. 1, & pl. 3. f. 2 (1890).

Anarta labradoris, Staud. Cat. Lep. pal. p. 219 (1901).

Head, thorax, and abdomen black-brown mixed with a few grey hairs; tarsi with slight white rings. Fore wing black-brown overlaid with some white hairs; subbasal line ill-defined, greyish, oblique, from costa to inner margin; antemedial line indistinct, defined by greyish on inner side, oblique, waved; orbicular and reniform very

small, undefined, greyish, the former round; postmedial line defined by grey on outer side, bent outwards below costa, then minutely dentate, incurved below vein 4, some whitish points beyond it on costa; subterminal line only defined by diffused black-brown on inner side, angled outwards at vein 7 and middle, then incurved, the area beyond it greyish; a terminal series of blackish spots; cilia chequered black-brown and greyish. Hind wing black-brown with whitish patch on costal area beyond middle; cilia white. Underside of fore wing suffused with blue-grey except terminal area.

Ab. 1. *sibirica*. Larger; underside of fore wing black with whitish subterminal line, the cilia intersected with white, of hind wing black with white cilia.—Changai Mts.

Ab. 2. *colthoffi*. Larger; fore wing more suffused with grey, the medial area darker.—Greenland.

Ab. 3. *labradoris*. Hind wing with large whitish postmedial patch from costa to vein 2.—Canada.

Hab. Greenland; Canada, Barren Grounds (*Hanbury*), 1 ♀, Labrador, Zeller, Frey, and Grote Colls, 4 ♂, Br. Columbia, Laggan (*Wolley-Dod*), 1 ♀, Mt. Assiniboine (*Mrs. Nicholl*), 1 ♂, Lake O'Hara (*Mrs. Nicholl*), 1 ♂, 1 ♀, Lake Louise (*Mrs. Nicholl*), 1 ♂, 1 ♀; Scandinavia, Finmark, Porsanger Fjord, Zeller and Frey Colls.; Lapland, Leech Coll.; Mongolia, Changhai. *Exp.* 24–26 millim.

2613. Sympistis nigrita.

Anarta nigrita, Boisd. Ind. Meth. p. 161 (1840); Herr.-Schäff. Eur. Schmett., Noct. f. 296; Hffm. Gr. Schmett. Eur. ed. ii. pl. 50. f. 23; Staud. Cat. Lep. pal. p. 219.
Noctua vidua, Frr. Neue Beitr. iv. pl. 311. ff. 2, 3 (nec Hübn.).

Head, thorax, and abdomen black-brown overlaid with blue-grey hairs; tarsi with slight whitish rings. Fore wing black overlaid with blue-grey hairs, the terminal area blue-grey; subbasal line represented by faint double blackish marks from costa and cell; antemedial line very indistinct, angled outwards in cell and inwards in submedian fold; orbicular absent; reniform a small ill-defined whitish mark; traces of a waved medial line; postmedial line forming a black spot at costa, then indistinct, minutely dentate, excurved to vein 4, then incurved and below submedian fold excurved again, some whitish beyond it at costa; subterminal line only defined by the contrast between the black and grey areas, angled outwards at vein 7 and middle, then incurved; some small patches of blackish before termen; cilia chequered fuscous and whitish. Hind wing black-brown slightly suffused with blue-grey scales; cilia white, brownish at base towards apex and tornus. Underside of fore wing suffused with blue-grey except terminal area; hind wing with some white on veins of postmedial costal area.

Hab. Switzerland, Leech Coll., Albula, Frey Coll., Stelvio, Frey Coll.; Tyrol, Leech Coll. *Exp.* 28–32 millim.

2614. Sympistis funesta.

Noctua funesta, Payk. Skriv. Nat. Sels. 1793 p. 100, pl. 2. f. 3; Zett. Ins. Lapp. p. 950

Noctua funebris, Hübn. Eur. Schmett., Noct. f. 433 (1827); Dup. Lép. Fr. vii. p. 299, pl. 118. f. 5; Herr.-Schaff. Eur. Schmett., Noct. ff. 209–10; Staud. Cat. Lep. pal. p. 219; Smith. Cat. Noct. N. Am. p. 295.

Anarta nigrita, Dup. Lép. Fr. Suppl. iv. p. 97, pl. 58. f. 6. (nec Boisd.).

Head, thorax, and abdomen black-brown with some whitish hair. Fore wing black-brown suffused with grey, the medial area darker except beyond reniform; subbasal line black, from costa to vein 1; antemedial line black, rather diffused, excurved from below costa to vein 1 where it is angled inwards, then again excurved; orbicular and reniform small with dark centres and faint greyish annuli slightly defined by black, the former round; traces of a sinuous medial line; postmedial line black, obliquely excurved from just below costa to vein 5, then incurved and again excurved below submedian fold; subterminal line diffused, blackish, angled outwards at veins 6, 7 with slight dentate black marks before it at middle, incurved below vein 3, with blackish mark beyond it above tornus: a fine black terminal line; cilia black-brown slightly mixed with grey. Hind wing black-brown; cilia white, brownish at base towards apex. Underside black-brown, the fore wing slightly suffused with grey except terminal area.

Hab Labrador; Switzerland, Leech Coll., Gadmenthal, Frey Coll.; Scandinavia; Lapland; N.E. Siberia. *Exp.* 30 millim.

Genus HYPSOPHILA.

Type.

Hypsophila, Staud. Stett. ent. Zeit. 1888, p. 40 ..... *jugorum*.

Proboscis fully developed; palpi upturned to vertex of head and fringed with very long hair in front; frons smooth; eyes small, reniform; antennæ of male with fascicles of long cilia; head and thorax clothed with long woolly hair only and without crests; pectus and legs clothed with woolly hair; abdomen clothed with woolly hair and without crests. Fore wing triangular, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

A. Hind wing white with black discoidal spot and terminal band.

a. Hind wing with the inner edge of terminal band slightly incurved below vein 3 ..... [illegible].

b. Hind wing with the inner edge of terminal band angled outwards at discal fold, then strongly incurved ..... *jugorum*.

B. Hind wing with the basal area black-brown with a greenish grey tinge ..... [illegible].

2615. Hypsophila tamerlana. (Plate CVI. fig. 1.)

Hypsophila tamerlana, Staud. Cat. Lep. pal. p. 220 (1901).

♂. Head and thorax clothed with greenish-grey hair tinged with brown; legs with black and white hair; abdomen black

clothed with whitish hair. Fore wing greenish grey irrorated with brown, the medial area slightly suffused with red-brown; antemedial line oblique from costa to submedian fold where it is angled outwards, slightly angled inwards at median nervure and vein 1; traces of a minute claviform; orbicular and reniform with brown centres and whitish annuli, the former very small, rather elongate elliptical, the latter small; postmedial line oblique from costa to vein 6, then minutely dentate, excurved to vein 4, then strongly incurved; subterminal line defined on inner side by a broad brown bar from costa and diffused brown from vein 4 to inner margin, dentate at veins 7, 6, 4, 3, then incurved, a terminal series of small blackish spots except towards tornus; cilia whitish at base, fuscous at tips. Hind wing white, the inner area tinged with fuscous; a terminal black band, rather broad at costa, its inner edge incurved below vein 3, well separated from the narrow discoidal lunule; cilia white. Underside of fore wing white with black discoidal lunule, black bar from costa before apex and fuscous subterminal band from vein 4 to inner margin.

Hab. W. Turkestan, Kuruk Tag, 1 ♂; E. Turkestan, Kashgar, Kola, Thian Shan. *Exp.* 30 millim.

2616. Hypsophila jugorum.

Heliothis jugorum, Ersch. Fedtsch. Reise, p. 48, pl. 3. f. 46 (1874); Staud. Cat. Lep. pal. p. 219.
Anarta haberhaueri, Staud. Stett. ent. Zeit. 1882, p. 50.
Hypsophila pamira, Staud. Stett. ent. Zeit. 1888, p. 42.

♂. Head, thorax, and abdomen clothed with greenish-grey hair slightly tinged with rufous. Fore wing greenish grey tinged with

Fig. 142.—*Hypsophila jugorum*, ♂. ½.

pale reddish brown and with slight dark irroration; antemedial line reddish brown, diffused, somewhat sinuous, oblique from costa to submedian fold where it is slightly angled outwards; orbicular very small, round, with slight grey annulus; reniform a fuscous lunule: postmedial line brown, very minutely dentate, oblique from costa to vein 6, excurved to vein 4, then obliquely incurved; subterminal line only defined by brown suffusion on inner side, its outer edge somewhat dentate and incurved at discal fold and below vein 3; a fine terminal dark line. Hind wing white, the basal and inner areas suffused with brown; a large blackish oblique oblong discoidal spots terminal area black-brown, its inner edge angled outwards at discal fold, then incurved to discoidal spot; cilia white. Underside of both

wings whitish, with the terminal area broadly fuscous leaving some whitish at apex of fore wing beyond a dark bar from costa; both wings with large oblong black discoidal spot.

Ab. 1. *haberhaueri*. Fore wing with the ante- and postmedial lines defined by brown on medial area, approximated below submedian fold and conjoined into a brown band.

Ab. 2. *pamira*. Fore wing more uniform red-brown, the ante- and postmedial lines more approximated below submedian fold; hind wing with the basal and inner areas more suffused with brown leaving the discoidal spot on a white patch.

Ab. 3. Hind wing with the inner edge of terminal area less incurved at middle and well separated from the discoidal spot.

Ab. 4. Fore wing with the medial area suffused with red-brown; hind wing with the discoidal spot forming a narrow lunule well separated from the inner edge of terminal band which is excurved, not angled at discal fold.

Hab. W. Turkestan, Turkomania, 6 ♂, Ferghana, Marghilan, 1 ♂, Ala Tau, Issyk Kul, Pamirs; E. Turkestan, Kaschgar; Kashmir, Deosai Plains (*Leech*), 1 ♂, Goorais Valley (*Leech*), 1 ♂, Skoro La (*Leech*), 1 ♂. *Exp.* 24–30 millim.

2617. Hypsophila grumi. (Plate CVI. fig. 2.)

Hypsophila grumi, Alph. Hor. Ent. Soc. Ross. xxvi. p. 454 (1892); Staud. Cat. Lep. pal. p. 220.

Head and thorax grey-brown; fore and mid tarsi brown with pale rings; pectus and hind legs clothed with white hair; abdomen clothed with grey-white hair. Fore wing grey-brown slightly irrorated with dark brown, the outer half of medial area dark brown; subbasal line represented by black striæ from costa and cell; antemedial line indistinct, waved, interrupted, somewhat oblique, forming small black spots on costa and in cell; claviform only represented by some whitish scales at extremity; orbicular and reniform moderate with traces of whitish annuli, defined by brown at sides, the former round, with dark patches between them and beyond the reniform; a slight waved medial line forming the inner edge of darker area; postmedial line forming two dark marks on costa, then indistinctly double, dentate, incurved below vein 4; subterminal line formed of slight whitish lunules, defined on inner side by small, rather diffused dentate blackish marks, angled outwards at vein 7 and middle; a terminal series of small black spots; cilia pale rufous. Hind wing black-brown, the basal and inner areas with a greenish-grey tinge; cilia pure white. Underside of both wings blue-white with broad curved black postmedial band and broad terminal band, on fore wing slightly intersected by whitish streaks on the veins.

Hab. Tibet, Kuku Noor, 2 ♂, 2 ♀, Amdo. *Exp.* 30–34 millim.

Genus CTEIPOLIA.

Cteipolia, Staud. Iris, ix. p. 191 (1896) ..... Type. *sacelli*.

Proboscis aborted, minute; palpi porrect to just beyond frons and fringed with very long hair in front; frons smooth; eyes small, elliptical; antennæ of male with very long cilia; head, thorax, and abdomen clothed with long rough hair and without crests. Fore wing very narrow, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomising with 8 to form the areole; 11 from cell. Hind wing with vein 5 obsolescent from middle of discocellulars; 6, 7 strongly stalked; 8 anastomosing with the cell near base only.

Sect. I. Hind wing with veins 3, 4 strongly stalked.

2618. Cteipolia sacelli.

Cteipolia sacelli, Staud. Iris, ix. pp. 191, 371, pl. 4. f. 13 (1896); id. Cat. Lep. pal. p. 181.

♂. Head, thorax, and abdomen brownish fuscous mixed with grey. Fore wing brownish grey slightly irrorated with fuscous, the postmedial area slightly suffused with purplish red; a black streak in base of cell; a short subbasal streak on costa; antemedial line rather oblique, waved, with more prominent spot on costa; orbicular and reniform deep black, the former a small elongate spot, the latter a bar-shaped spot; postmedial line produced to short streaks on the veins, bent outwards below costa and oblique below vein 4; a series of short black streaks alternating with grey points on costa towards apex; a very indistinct grey subterminal line defined on

Fig. 143.—*Cteipolia sacelli*, ♂. ½.

inner side by slight dark suffusion, angled outwards at vein 7, excurved at middle, and bent outwards to tornus; a terminal punctiform line. Hind wing grey suffused with fuscous brown; the underside whitish irrorated with brown, a short black streak in cell and black discoidal lunule showing through to upperside.

♀. Head, thorax, abdomen, and fore wing much darker, the last without any purple suffusion.

Hab. W. Turkestan, Issyk Kul, 1 ♂, 1 ♀; E. Turkestan, Ili. *Exp.* ♂ 28, ♀ 30 millim.

Sect. II. Hind wing with veins 3, 4 from angle of cell.

2619. Cteipolia acrophila, n. sp.

Head, thorax, and abdomen brownish fuscous mixed with grey. Fore wing grey suffused and irrorated with brownish fuscous; an

indistinct diffused blackish subbasal line; antemedial line rather indistinct and diffused, excurved below costa and in submedian interspace; orbicular and reniform represented by small whitish spots indistinctly defined by diffused black and almost or quite conjoined; postmedial line defined by grey on outer side, bent

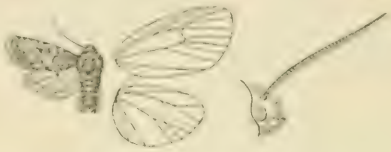


Fig. 144.—*Cleipolia acrophila*, ♂. ½.

outwards below costa, then minutely dentate, incurved below vein 4; subterminal line defined by fuscous suffusion on inner side, excurved below costa and at middle; the costa towards apex with series of black and grey points; a terminal series of black points. Hind wing semihyaline grey suffused with fuscous brown; the underside with small discoidal spot.

Hab. Kashmir, Kardong, 14,000′ (*McArthur*), 1 ♂, 1 ♀ type, Hunza (*Sir M. Conway*), 1 ♀. *Exp.* 24–28 millim.

Genus **DASYPOLIA**.

	Type.
Dasypolia, Guen. Noct. ii. p. 44 (1852)	*templi*.

Proboscis aborted; palpi porrect to just beyond frons, fringed with long hair below; frons smooth; eyes large, rounded; antennæ of male typically minutely serrate with fascicles of very long cilia; head and thorax clothed with long hair only; tibiæ fringed with long hair, the tarsi with short hair; abdomen clothed with rough hair but without crests. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from or from just below middle of discocellulars; 6, 7 from upper angle or shortly stalked; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with long branches to apex.

*2620. Dasypolia mitis.

Dasypolia mitis, Püng. Iris, xix. p. 95 (1906).

♂. Head and thorax very pale yellow faintly tinged with rufous;

Fig. 145.—*Dasypolia mitis*, ♂. ½.

sides of palpi and frons and antennæ rufous; abdomen yellowish white. Fore wing very pale yellow, the medial area tinged with

rufous; antemedial line rufous, angled outwards in cell, then excurved in the interspaces and angled inwards on the veins, somewhat oblique; orbicular and reniform white slightly defined by rufous, the former very small, round, the latter with nearly straight inner edge and open above; postmedial line rufous, dentate, arising from vein 7, somewhat oblique to vein 4, then incurved; the veins of terminal area faintly tinged with rufous; subterminal line absent except for a faint rufous shade before it at costa; cilia white. Hind wing pure white.

Hab. W. Turkestan, Askabad, type † ♂ in Coll. Püngeler. *Exp.* 40 millim.

Sect. II. Antennæ of male bipectinate with slender branches.

2621. Dasypolia informis.

Graphiphora informis, Wlk. x. 402 (1856).

♂. Head, thorax, and abdomen olive-grey mixed with fuscous brown; antennæ whitish; tarsi fuscous ringed with whitish. Fore wing olive-grey thickly irrorated with fuscous; subbasal line black, from costa to submedian fold, with slight black streak beyond it in cell and black streak from its lower extremity to the small dark claviform; antemedial line black, nearly erect, slightly angled inwards on vein 1; orbicular and reniform fuscous defined by black, the former small, elongate elliptical, the latter moderate; postmedial line bent outwards below costa, then minutely dentate, angled inwards in discal fold and incurved below vein 4, some pale

Fig. 146.—*Dasypolia informis*, ♂. ½.

points beyond it on costa; subterminal line indistinct, pale, faintly defined by blackish on inner side and with dentate black marks before it between veins 7 and 4; a slightly waved black terminal line; cilia pale olive with slight dark line through them. Hind wing ochreous tinged with olive-fuscous especially on terminal area; cilia ochreous with a faint brown line through them; the underside ochreous whitish, the costal and terminal areas suffused and irrorated with brown, a short streak in cell, discoidal lunule, curved postmedial line, and traces of subterminal line.

Hab. 'Interior of S. Africa' (*Burke*), 1 ♂ type. *Exp.* 40 millim.

Sect. III. Antennæ of male minutely serrate with fascicles of very long cilia.

A. Fore wing with the orbicular small, round.
  a. Fore wing with the subterminal line almost obsolete ..... *ferdinandi*.
  b. Fore wing with the subterminal line distinctly defined.
    a^1. Fore wing with the antemedial line strongly and irregularly waved ..... *templi*.
    b^1. Fore wing with the antemedial line minutely waved ... *fani*.
B. Fore wing with the orbicular elongate elliptical ..... *gerbillus*.

*2622. Dasypolia ferdinandi. (Plate CVI. fig. 3.)

Dasypolia ferdinandi, Rühl, Soc. Ent. vi. p. 169 (1892); Staud. Cat. Lep. pal. p. 181.

Head and thorax pale grey-brown mixed with fuscous; sides of palpi and frons dark brown; abdomen pale grey-brown. Fore wing pale olive-grey thickly irrorated with brown, the medial area with the cell and costal area slightly darker; subbasal line absent; antemedial line brownish, oblique, waved; claviform absent; orbicular a greyish ochreous point; reniform small with greyish ochreous annulus, undefined; postmedial line brownish, rather diffused, bent outwards below costa, then minutely dentate, excurved to vein 4, then very oblique and angled outwards on vein 1, some greyish points beyond it on costa; subterminal line very indistinct, pale, slightly defined by brownish on inner side, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of slight dark striæ; cilia brownish grey with a slight brown line through them. Hind wing pale greyish slightly tinged with brown: the underside irrorated with brown, a slight discoidal spot and diffused sinuous postmedial line.

Hab. Switzerland, Zermatt in Coll. Püngeler. *Exp.* 40 millim.

2623. Dasypolia templi.

Noctua templi, Thunbg. Diss. Ent. iv. p. 56, f. 3 (1792); Hübn. Eur. Schmett., Noct. f. 373; Dup. Lép. Fr. vi. p. 43, pl. 75. f. 1; Steph. Ill. Brit. Ent., Haust. iii. p. 31, pl. 26. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 454; Mill. Icones, ii. pl. 87. ff. 3–7; Staud. Cat. Lep. pal. p. 181.
Dasypolia alpina, Rghfr. Verh. z.-b. Wien, 1866, p. 999.
Dasypolia caflischi, Rühl, Soc. Ent. vi. p. 170 (1892).

Head and thorax clothed with olive-brown and fulvous yellow

Fig. 147.—*Dasypolia templi*, ♂. ½.

hair; abdomen more fulvous yellow. Fore wing fulvous yellow thickly irrorated with fuscous; a waved subbasal line from costa to

submedian fold; a slightly oblique waved antemedial line; orbicular represented by a small yellow spot, the reniform by an ill-defined narrow yellow lunule, sometimes with some fuscous in centre; postmedial line defined by yellow on outer side, minutely dentate, bent outwards below costa, excurved to vein 4, then incurved; subterminal line rather diffused, yellow with fuscous suffusion on inner side, angled outwards at veins 7, 4, 3; cilia fuscous brown intersected by yellow spots at base. Hind wing pale fulvous yellow irrorated with fuscous; a sinuous dark postmedial line and diffused subterminal band, the underside with slight discoidal spot, the postmedial line more prominent.

Ab. 1. *alpina*. Greyer.

Hab. Britain, Shetland, Leech Coll., Scotland, Frey Coll., England, Leech Coll.; France; Germany, Zeller Coll., Silesia, Bohemia; Austria, Alps; Switzerland, Valais, Teruel; Armenia. *Exp.* 44–48 millim.

Larva. Meyr. Brit. Lep. p. 55; Barrett, Lep. Brit. iv. p. 291, pl. 168. f. 1.

Pinkish ochreous dotted with blackish; head yellow-brown. Food-plant, roots of *Heracleum*. 5–8.

*2624. Dasypolia fani.

Dasypolia fani, Staud. Rom. Mém. vi. p. 522, pl. 9. f. 10 (1892); id. Cat. Lep. pal. p. 181.
Dasypolia lama, Staud. Iris, ix. p. 266 (1896).
Dasypolia asiatica, Alph. Rom. Mém. ix. p. 19 (1897).

Head, thorax, and abdomen reddish grey-brown. Fore wing reddish grey-brown, the veins slightly defined by grey, the outer half of medial area darker; subbasal line waved, from costa to submedian fold; antemedial line defined by grey on inner side, erect, waved; orbicular and reniform small, with red-brown centres and slight pale annuli defined by brown, the former round; a waved medial line, oblique from costa to median nervure; postmedial line defined by grey on outer side, bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line pale, slightly defined by brown on inner side, excurved at vein 7, then somewhat dentate; a slight dark subterminal line; cilia with a fine pale line at base and intersected by pale streaks. Hind wing pale suffused with red-brown, a slight discoidal lunule, sinuous postmedial line, and diffused subterminal band; a fine dark terminal line.

Ab. 1. *lama*. Yellowish grey; fore wing with the markings less distinct.

Hab. W. Turkestan, Issyk Kul; E. Turkestan, Ili; Mongolia, Uliassutai; Tibet, Kuku Noor, Amdo; E. Siberia, Ussuri. *Exp.* 34–39 millim. This species is unknown to me.

*2625. Dasypolia? gerbillus.

Dasypolia gerbillus, Alph. Hor. Soc. Ent. Ross. xxvi. p. 451 (1892); id. Rom. Mém. ix. p. 21, pl. 3. f. 6; Staud. Cat. Lep. pal. p. 181.

♀. Grey tinged with yellowish. Fore wing with the subbasal line dark, from costa to submedian fold, antemedial line angled outwards below costa, then oblique, waved; claviform absent; orbicular and reniform whitish defined by fuscous, the former elongate-elliptical: medial line oblique from costa to lower angle of cell, then waved; postmedial line bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved; subterminal line angled outwards at vein 7 and excurved at middle, a dark terminal line. Hind wing grey with slight discoidal point, sinuous postmedial line, and diffused subterminal band; the underside yellowish grey with dark discoidal lunule.

Hab. Tibet, Nan Schan Mts. *Exp.* 31 millim. This species is unknown to me.

Genus DASYTHORAX.

	Type.
Dasythorax, Staud. Stett. ent. Zeit. 1889, p. 38	*poliana.*

Proboscis fully developed; palpi upturned, reaching vertex of head, fringed with long hair in front, the 3rd joint minute; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with long rough hair and without crests; abdomen with rough hair at base but without crests. Fore wing with the apex rounded, the termen strongly curved; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell or shortly stalked; 5 obsolescent from just below middle of discocellulars; 6, 7 stalked; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line incurved and dentate below vein 4.	
a. Fore wing with the orbicular and reniform defined by brown.	*poliana.*
b. Fore wing with the orbicular and reniform obsolete	*anartina.*
B. Fore wing with the postmedial line bent inwards below vein 4 to below the cell, not dentate.	
a. Fore wing with the orbicular represented by a black point, the reniform by a small spot	*hirsutula.*
b. Fore wing with the orbicular absent, the reniform an obscure lunule.	
a^1. Fore wing with the postmedial line excurved, not angled inwards in discal fold	*hirsuta.*
b^1. Fore wing with the postmedial line more or less angled inwards in discal fold.	
a^2. Fore wing with the postmedial line excurved at vein 1.	*rasilis.*
b^2. Fore wing with the postmedial line not excurved at vein 1	*glebicolor.*
C. Fore wing with the postmedial line oblique below vein 4, not dentate	*daishi.*

*2626. Dasythorax poliana. (Plate CVI. fig. 4.)

Dasythorax polianus, Staud. Stett. ent. Zeit. 1889, p. 38; id. Cat. Lep. pal. p. 180.

♂. Head and thorax olive-grey mixed with some brownish; sides of palpi and frons blackish; tarsi black with pale rings.

Fore wing olive-grey tinged with ochreous; subbasal line fuscous grey, curved, from costa to submedian fold; antemedial line double at costa, then single, oblique to submedian fold, then angled inwards on vein 1; claviform defined by brown at extremity; orbicular rounded, defined by brown at sides only; reniform defined by brown; a diffused medial line oblique from costa to median nervure, then approximated to the postmedial line which is dentate, excurved from costa to vein 4, then oblique and angled outwards on vein 1; subterminal line indistinct, pale, defined on inner side by diffused grey, the area beyond it grey, somewhat excurved below vein 7 and at middle; cilia chequered ochreous and grey. Hind wing pale grey slightly tinged with brown; an indistinct rather diffused postmedial line and traces of subterminal band; cilia ochreous white; the underside whitish slightly tinged and irrorated with brown, a slight curved postmedial line.

Hab. W. Turkestan, Issyk Kul, Kisil-Yart Mts., cotype† ♂ in Coll. Püngeler; E. Turkestan, Kashgar. *Exp.* 42 millim.

2627. **Dasythorax anartina.** (Plate CVI. fig. 5.)

Dasythorax anartinus, Püng. Iris, xiv. p. 185, pl. 2. ff. 8, 9 (1901).

Head and thorax olive-grey mixed with fuscous; palpi, pectus, legs, and anal tuft yellowish. Fore wing olive-grey thickly irrorated with fuscous and more or less tinged with fulvous yellow; an indistinct waved subbasal line from costa to submedian fold with dark patch beyond it on costa; a rather diffused antemedial line excurved in interspaces and angled inwards on the veins; orbicular and reniform obsolete; a diffused medial shade darkening the whole inner medial area; postmedial line slightly bent outwards below costa, then dentate, excurved to vein 4, then incurved; a subterminal series of indistinct yellowish spots defined on inner side by dentate dark marks, excurved at vein 7 and middle; cilia yellowish slightly intersected with fuscous. Hind wing greyish fuscous with a slight purple gloss; cilia yellowish white; the underside ochreous grey irrorated with brown, a diffused rather sinuous postmedial line.

Hab. W. Turkestan, Turkomania, 1 ♂, 1 ♀. *Exp.* 36 millim.

2628. **Dasythorax hirsutula.** (Plate CVI. fig. 6.)

Spintherops hirsutula, Alph. Iris, vi. p. 347 (1893); Staud. Cat. Lep. pal. p. 251.

♂. Head and thorax olive-grey slightly mixed with fuscous; abdomen olive-grey dorsally tinged with fuscous. Fore wing olive-grey slightly irrorated with fuscous, an indistinct antemedial line angled inwards in cell; a point in middle of cell and elliptical discoidal spot representing the orbicular and reniform; postmedial line indistinct, strongly excurved from costa to vein 4, then retracted to below end of cell, excurved in submedian interspace and angled

inwards on vein 1 ; a curved diffused subterminal band. Hind wing fuscous grey with a silvery gloss; cilia olive-grey; the underside olive-grey slightly irrorated with fuscous, a minute discoidal point.

Hab. E. Turkestan, Kashgar, Altyn Tag, 1 ♂. *Exp.* 36 millim.

*2629. Dasythorax hirsuta. (Plate CVI. fig. 7.)

Spintherops hirsuta, Staud. Berl. ent. Zeit. 1870, p. 123; Rebel, Verh. zool.-bot. Wien, 1899, p. 167, pl. 4. f. 5; Staud. Cat. Lep. pal. p. 251.

Head and thorax olive-grey suffused with brown ; sides of palpi and frons irrorated with black; pectus with some whitish hair; tarsi blackish with pale rings; abdomen pale ochreous brown. Fore wing ochreous suffused with olive fuscous and with slight dark irroration; subbasal line absent; antemedial line indistinct, diffused, somewhat oblique from costa to median nervure, then incurved; claviform and orbicular absent; reniform a faint dark lunule; postmedial line indistinct, diffused, excurved from costa to vein 4, then bent inwards to below end of cell and again slightly excurved; subterminal line very indistinct, only defined by diffused fuscous on inner side, angled outwards at vein 7 and excurved at middle; cilia pale at tips. Hind wing glossy greyish suffused with pale ochreous brown; cilia whitish, ochreous at base; the underside whitish tinged with ochreous, a faint diffused curved postmedial line, the terminal area slightly tinged with fuscous.

Hab. Switzerland, Valais; Tyrol; Persia; W. Turkestan, Issyk Kul. *Exp.* 44 millim.

*2630. Dasythorax rasilis. (Plate CVI. fig. 8.)

Spintherops rasilis, Püng. Iris, xiii. p. 120, pl. 4. f. 7 (1900); Staud. Cat. Lep. pal. p. 251.

Head and thorax olive-grey suffused with brown; tarsi blackish with pale rings; pectus with whitish hair; abdomen grey-white tinged with brown. Fore wing greyish ochreous tinged with brown and thickly irrorated with fuscous; traces of a dark subbasal line from costa to submedian fold; antemedial line fuscous, diffused, waved, nearly erect; claviform and orbicular absent; reniform a slight dark lunule; a slight diffused medial shade; postmedial line fuscous, diffused, oblique from costa to vein 6, angled inwards at discal fold, at vein 3 bent inwards to below end of cell, then sinuous; subterminal line only defined by diffused fuscous on inner side, angled outwards at veins 7, 4, 3; cilia pale at tips. Hind wing glossy grey-white tinged with ochreous brown; cilia white tinged with brown at base; the underside white tinged with ochreous, traces of a discoidal lunule and diffused curved postmedial line.

Hab. W. Turkestan, Dscharkend, Issyk Kul type† ♂ ♀ in Coll. Püngeler. *Exp.* 48 millim.

2631. Dasythorax glebicolor.

Spintherops glebicolor, Ersch. Fedtsch. Reis. p. 58, pl. 4. f. 59 (1874); Staud. Cat. Lep. pal. p. 251.

♂. Head and thorax olive-grey more or less strongly mixed with fulvous yellow; abdomen fulvous yellow dorsally tinged with fuscous brown. Fore wing fulvous yellow largely suffused with olive fuscous; a diffused fuscous antemedial line angled inwards in cell; a discoidal lunule; postmedial line defined by yellowish on outer side, slightly waved, excurved from costa to vein 4, then bent

Fig. 148.—*Dasythorax glebicolor*, ♂. ½.

inwards to below end of cell; subterminal line yellowish, rather maculate, defined by fuscous suffusion on inner side, excurved at vein 7 and middle. Hind wing fuscous brown with a slight reddish tinge; cilia fulvous yellow, the underside yellowish irrorated with fuscous, a discoidal point and curved postmedial line.

♀. Fore wing more uniform olive fuscous.

Hab. W. Turkestan, Issyk Kul; E. Turkestan, Ili, Kuldja, 2 ♀; E. Siberia, Amurland, 3 ♂, 2 ♀. *Exp.* 38–42 millim.

*2632. Dasythorax daishi.

Hypsophila daishi, Alph. Rom. Mém. vi. p. 43, pl. 2. f. 9 (1892).

♂. Head, thorax, and abdomen red-brown; pectus, legs and ventral surface of abdomen yellowish white. Fore wing red-brown; antemedial line black, waved, nearly erect; orbicular and reniform obsolete with a small quadrate black spot in cell between their usual positions; a medial black point on costa; postmedial line black, slightly excurved below costa, angled inwards at discal fold and oblique below vein 4; subterminal line represented by a slight dark shade towards costa. Hind wing red-brown with the cilia white. Underside of both wings white shading to yellowish brown on terminal area; fore wing with discoidal point; both wings with curved postmedial line.

Hab. W. China, Setchuen, Houton R. *Exp.* 32 millim. This species is unknown to me.

Genus **HARPAGLÆA**, nov.

Type, *H. pastillicans*.

Proboscis fully developed; palpi obliquely upturned, fringed with hair in front; frons smooth; eyes large, rounded; antennæ of male with minute fascicles of cilia; head and thorax clothed with hair only, the vertex of head

with crest; tegulæ produced to a slight dorsal ridge; prothorax with triangular crest; fore tarsi with five curved claw-like spines on outer side of 1st joint; abdomen dorsally flattened, with crest from 3 base at base and lateral fringes of hair but no crests. Fore wing with the apex somewhat produced and acute, the termen excurved at middle, then oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the veins streaked with white..... *sericea.*
B. Fore wing with the veins not streaked with white.
a. Fore wing grey tinged with rufous ..... *tremula.*
b. Fore wing purplish grey not tinged with rufous..... *pastillicans.*

2633. Harpaglæa sericea. (Plate CVI. fig. 9.)

Glæa sericea, Morr. Proc. Bost. Soc. N. H. xvii. p. 151 (1874); Smith, Cat. Noct. N. Am. p. 222.
Glæa venustula, Grote, Can. Ent. vii. p. 84 (1875); Smith, Cat. Noct. N. Am. p. 222.

Head and thorax purplish grey mixed with dark red-brown; palpi rufous at sides; tegulæ with whitish tips preceded by a brown line; abdomen purplish grey tinged with rufous and irrorated with black, with slight pale segmental lines. Fore wing purplish grey more or less strongly tinged with rufous and irrorated with black, the veins finely streaked with white, the inner margin whitish with the extreme edge rufous; subbasal line whitish, straight, from costa to submedian fold with a small dentate whitish mark beyond it in cell; antemedial line whitish defined by fuscous on outer side, obliquely curved; orbicular and reniform defined by whitish, the former oblique elliptical, the latter narrowing below and with black spot in its lower extremity; a slight medial shade from lower angle of cell to above inner margin; postmedial line whitish slightly defined by fuscous on inner side, excurved from costa to vein 4, then oblique; subterminal line whitish slightly defined by rufous on inner side and fuscous irroration on outer, angled outwards at vein 7 and excurved at middle; a series of black points just before termen; cilia with a fine slightly waved white line through them. Hind wing fuscous brown with a silky gloss, the cilia tinged with rufous and with fine pale line at base; the underside grey tinged with purplish pink and irrorated with brown, a small discoidal spot, curved postmedial line, and some points on termen.

Hab. U.S.A., Massachusetts, New York, 2 ♂, 2 ♀, Maryland, Wisconsin, Illinois, Distr. of Columbia, Middle and Central States.
Exp. 42–48 millim.

2634. Harpaglæa tremula. (Plate CVI. fig. 10.)

Glæa tremula, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 276 (1874); Smith, Cat. Noct. N. Am. p. 222.

♀. Head and thorax grey mixed with purplish brown; sides of palpi rufous, of front black; legs rufous, the spurs banded black and white; abdomen grey-brown, the anal tuft and ventral surface

rufous. Fore wing pale purplish grey tinged with rufous and with slight fuscous irroration, the inner margin rufous, the veins of terminal half slightly streaked with white; a slight subbasal line from costa to submedian fold, slightly angled outwards and with point beyond it in cell; antemedial line strongly curved and minutely waved; orbicular and reniform moderate, defined by rufous, the former erect elliptical, the latter narrowing below and with black spot in its lower part; a slight sinuous medial shade; postmedial line brown, excurved from costa to vein 4, then incurved; subterminal line whitish defined by red-brown on inner side, slightly angled outwards at vein 7 and excurved at middle; a series of black points just before termen. Hind wing fuscous brown, the cilia pale rufous; the underside pale rufous irrorated with fuscous, a discoidal spot and sinuous postmedial line.

Hab. U.S.A., Texas, 2 ♀ type. *Exp.* 46 millim.

2635. Harpaglæa pastillicans.

Glæa pastillicans, Morr. Proc. Bost. Soc. Nat. Hist. xvii. p. 151 (1874); Smith, Cat. Noct. N. Am. p. 222.

♂. Head and thorax red-brown; palpi, antennæ, and tips of patagia rufous; frons black at sides; pectus and legs rufous, the spurs ringed with whitish; abdomen brown irrorated with fuscous, the anal tuft and ventral surface rufous. Fore wing purple-grey sparsely irrorated with black, the costal edge and

Fig. 149.—*Harpaglæa pastillicans*, ♂. ½.

inner margin bright rufous; subbasal brown points on median nervure and vein 1; antemedial line brown, oblique from costa to submedian fold, then slightly waved; orbicular and reniform very faintly defined, the former elliptical, the latter with its lower part narrower with a black spot in it; traces of a medial line from lower angle of cell to inner margin; postmedial line excurved from costa to vein 4, then incurved; subterminal line brown, angled outwards at vein 7 and excurved at middle; a terminal series of black points. Hind wing dark reddish brown, the terminal area darker; cilia grey-brown with fine pale line at base; the underside pale purplish pink irrorated with fuscous, a slight discoidal lunule and sinuous postmedial line.

Hab. U.S.A., New Hampshire, Massachusetts, New York, 5 ♀, Distr. of Columbia, Pennsylvania, 1 ♂. *Exp.* 44 millim.

Genus EPIGLÆA.

Type.

Epiglæa, Grote, Bull. U. S. Geog. Geol. Surv. Terr. iv. p. 181 (1878)... *decliva*.

Proboscis fully developed; palpi porrect to just beyond the large frontal tuft, fringed with long hair below, the 3rd joint short; frons smooth; eyes large, rounded; antennæ somewhat laminate and ciliated; head and thorax clothed with hair only, the vertex of head with large crest, the tegulæ produced to a slight dorsal ridge, the prothorax with large triangular crest; pectus with long hair; abdomen dorsally flattened, with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the costa arched, the apex produced and acute, the termen excurved at middle and oblique towards tornus; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the ante- and postmedial lines dark.
  a. Fore wing with the postmedial line dentate and produced to dark points on the veins ..... *decliva*.
  b. Fore wing with the postmedial line not dentate ..... *apiata*.
B. Fore wing with the ante- and postmedial lines whitish ..... *contracta*.

2636. Epiglæa decliva.

Orthosia decliva, Grote, 6th Rep. Peab. Ac. Sci. p. 30 (1874); Smith, Cat. Noct. N. Am. p. 222.
Glæa deleta, Grote, Psyche, ii. p. 80 (1877).

♂. Head and thorax bright rufous; antennæ with the shaft white towards base; abdomen pale rufous, greyish at base. Fore wing rufous suffused with greyish and with slight dark irroration; an indistinct curved subbasal line from costa to submedian fold; antemedial line indistinct, obliquely curved, rather irregularly waved; orbicular and reniform large, slightly defined by whitish,

Fig. 150.—*Epiglæa decliva*, ♂. ½.

the former oblique elliptical, open above, the latter with its lower part filled in with fuscous; a medial shade oblique from costa to lower angle of cell, then somewhat incurved; postmedial line bent outwards below costa, then minutely dentate and produced to dark points on the veins, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line whitish defined by rufous on inner side, angled outwards at vein 7 and excurved at middle; a fine waved brown terminal line. Hind wing pale pink

almost entirely suffused with fuscous, the cilia pale pink; the underside pinkish rufous irrorated with fuscous, a discoidal spot and sinuous postmedial line.

Hab. Canada (*Norman*), 1 ♂; U.S.A., East, Middle, and Central States, 1 ♂ type, Massachusetts, Newton (*Thaxter*), 1 ♂ type *deleta*. *Exp.* 50 millim.

2637. Epiglæa apiata. (Plate CVI. fig. 11.)

Orthosia apiata, Grote, 6th Rep. Peab. Ac. Sci. p. 30 (1874); id. Bull. Buff. Soc. Nat. Sci. ii. p. 125, pl. 1. f. 8; Smith, Cat. Noct. N. Am. p. 222.

♂. Head and thorax bright rufous; antennæ with the shaft white above towards base; abdomen pale rufous, pale at base and fulvous at extremity. Fore wing rufous slightly irrorated with purplish fuscous, the costal edge and inner margin bright rufous: subbasal line fuscous, slightly angled outwards in cell and ending at submedian fold; antemedial line obliquely curved; orbicular and reniform large, defined by deep rufous, the former oblique elliptical, the latter constricted at middle and extending to below cell; a diffused fuscous medial line, angled on median nervure and oblique towards costa and inner margin: postmedial line slightly excurved from below costa to vein 3, then incurved; subterminal line whitish defined by red-brown on inner side, slightly angled outwards at vein 7 and incurved below vein 2; a terminal series of slight dark points; cilia purplish pink at tips. Hind wing pale pink suffused with fuscous except costal area and termen; cilia pale pink; the underside pale pink with slight discoidal lunule, sinuous postmedial line and traces of diffused subterminal line.

Hab. U.S.A., Massachusetts, Newton (*Thaxter*), 1 ♂, New York, Illinois, Chicago, E. Falmouth, 1 ♂ type, Middle and Central States. *Exp.* 42–46 millim.

2638. Epiglæa contracta. (Plate CVI. fig. 12.)

Mesogona contracta, Butl. A. M. N. H. (5) i. p. 169 (1878); id. Ill. Het. B. M. ii. p. 31, pl. xxxi. f. 1.

Head and thorax rufous more or less strongly mixed with grey; antennæ whitish at base; abdomen rufous dorsally tinged with brown, greyish at base. Fore wing rufous more or less strongly irrorated with grey; a whitish subbasal line from costa to submedian fold; antemedial line whitish, very oblique from costa to above inner margin; orbicular and reniform large, defined by whitish, the former elliptical, the latter somewhat constricted at middle; a slightly curved rufous medial shade; postmedial line whitish, bent outwards below costa and incurved below vein 5; subterminal line whitish, angled outwards at vein 7 and incurved below vein 3; a fine pale waved terminal line. Hind wing rufous suffused and irrorated with dark brown; some dark striæ on apical half of termen; cilia rufous; the underside pale slightly tinged

with rufous and irrorated with brown, a large black discoidal lunule and slightly curved postmedial line.

Hab. Japan, Yokohama (*Jonas*, *Pryer*, *Manley*), 4 ♂, 5 ♀, type. *Exp.* 50 millim.

Genus ELVESIA.

Type.

Elwesia, Hmpsn. Moths Ind. ii. p. 171 (1894)..... *diplostigma*.

Proboscis fully developed; palpi with the 2nd joint obliquely upturned, fringed with hair in front, the 3rd porrect, long, naked and dilated at extremity; frons smooth, with large tuft of hair; eyes large, rounded; antennæ of female almost simple; head and thorax clothed with hair only, the tegulæ produced to a slight dorsal ridge, the thorax with very large triangular crest; tibiæ slightly fringed with hair; abdomen dorsally flattened, with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the termen and cilia very highly crenulated; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

*2639. Elvesia diplostigma.

Elwesia diplostigma, Hmpsn. Moths Ind. ii. p. 172 (1894).

♀. Head and thorax bright rufous, the hairs tipped with grey; tegulæ with deeper rufous line near tips which are grey; tarsi with slight grey rings; abdomen pale rufous. Fore wing bright rufous suffused and irrorated with violaceous grey, the terminal area slightly darker, the veins streaked with whitish; subbasal line whitish slightly defined by brown on each side, oblique, from costa to submedian fold; antemedial line whitish slightly defined on each

Fig. 151.—*Elvesia diplostigma*, ♀. ½.

side by brown, angled outwards below costa, then oblique; claviform, orbicular, and reniform very large, defined by whitish, the 1st extending to median nervure, the 2nd oblique elliptical, the 3rd erect elliptical, slightly expanding below with round fuscous spot defined by whitish in lower part and slight fuscous point in upper part; a slight diffused dark medial line; postmedial line whitish slightly defined by brown on inner side, slightly bent outwards below costa, then with double series of black points beyond it on the veins, excurved to vein 4, then incurved; subterminal line whitish slightly defined by rufous on inner side, almost straight from costa to vein 2, then incurved; a highly crenulate rufous terminal line with fine ochreous line beyond it at base of cilia which are rufous

irrorated with grey. Hind wing pale rufous suffused with brown except on costal and terminal areas; a waved rufous terminal line; cilia greyish at tips; the underside yellowish, the costal half suffused with rufous, a small blackish discoidal spot, slightly sinuous postmedial line, and indistinct diffused subterminal band.

Hab. Sikhim, Tonglo, 10,000′ (*Elwes*), type † ♀ in Coll. Elwes. *Exp.* 32 millim.

Genus RHYNCHAGLÆA, nov.

Type, *R. scitula.*

Proboscis fully developed; palpi with the 2nd joint oblique to just beyond the large frontal tuft and fringed with hair in front, the 3rd long, porrect, and dilated at extremity; frons smooth; eyes large, rounded; antennæ of male minutely ciliated; head and thorax clothed with hair only, the tegulæ produced to a slight dorsal ridge, the thorax without distinct crests; pectus clothed with long hair; abdomen dorsally flattened, with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the apex slightly produced, the termen slightly crenulate, somewhat excurved at middle, then oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2640. Rhynchaglæa scitula.

Xylophasia scitula, Butl. A. M. N. H. (5) iv. p. 359 (1879).

♂. Head and thorax dark purple-brown mixed with rufous; tarsi fuscous ringed with rufous; abdomen fuscous brown, the ventral surface pale rufous with sublateral black spots on two medial segments. Fore wing dark purple-brown, the basal and postmedial areas rufous and with numerous dark striæ; subbasal line represented by two slight striæ from costa; antemedial line indistinctly double, filled in with rufous on inner area, minutely waved; orbicular and reniform small, very indistinctly and incompletely defined by rufous, the former round; postmedial line

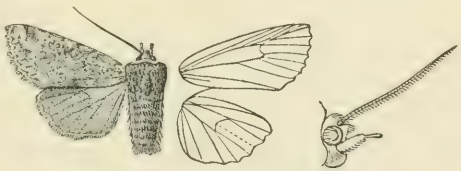


Fig. 152.—*Rhynchaglæa scitula*, ♂. ½.

indistinctly double filled in with some rufous, bent outwards below costa, then minutely waved, incurved at discal fold and below vein 4; subterminal line indistinct, pale, defined on inner side by some brown suffusion at costa, then by a series of minute somewhat dentate brown marks, slightly angled outwards at vein 7 and excurved at middle, the area beyond it purple-brown except at apex; a terminal series of slight dark points. Hind wing fuscous

brown; the underside pale thickly irrorated with brown, a small discoidal spot and sinuous postmedial line.

♀. Head, thorax, and fore wing with the ground-colour ochreous brown to bright rufous.

Hab. Japan, Yokohama (*Pryer*), 2 ♂, 2 ♀, type. *Exp.* 36 millim.

Genus EUPSILIA.

	Type.
Eupsilia, Hübn. Verz. p. 231 (1827)	*satellitia.*
Scopelosoma, Curt. Brit. Ent. pl. 635 (1836)	*satellitia.*
Mecoptera, Guen. Ann. Soc. Ent. Fr. vi. p. 225 (1837)	*satellitia.*

Proboscis fully developed; palpi porrect, not extending beyond the large frontal tuft and fringed with long hair below; frons smooth; eyes large, rounded; antennæ of male with fasciculate cilia; head and thorax clothed with hair only, the tegulæ produced to a slight dorsal ridge, the prothorax with triangular crest; pectus clothed with long hair; abdomen dorsally flattened, with some rough hair at base and lateral fringes of hair but without dorsal crests. Fore wing with the termen and cilia strongly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line bent outwards below costa and incurved below vein 4.
  a. Fore wing with the postmedial line excurved at discal fold, the discoidal white spots large ..... *tripunctata.*
  b. Fore wing with the postmedial line incurved at discal fold ..... *satellitia.*

B. Fore wing with the postmedial line incurved from costa to inner margin.
  a. Fore wing with the subterminal line dentate between veins 7 and 2 ..... *quadrilinea.*
  b. Fore wing with the subterminal line incurved between veins 7 and 2 ..... *scripturata.*

2641. Eupsilia tripunctata. (Plate CVII. fig. 27.)

Eupsilia tripunctata, Butl. A. M. N. H. (5) i. p. 168 (1878); id. Ill. Het. B. M. ii. p. 30, pl. 30. f. 9; Staud. Cat. Lep. pal. p. 210.

Head and thorax grey irrorated with red-brown; tegulæ with rufous line near tips; abdomen grey irrorated with brown and slightly tinged with rufous. Fore wing violaceous grey irrorated with red-brown, some red-brown suffusion near end of cell; subbasal line fine, red-brown, from costa to submedian fold; antemedial line fine, red-brown, slightly sinuous and almost erect; medial line indistinct, oblique from costa to below cell, then sinuous; a semicircular white discoidal spot with small spot beyond its upper and lower extremities, the spots sometimes slightly tinged with rufous; postmedial line fine, red-brown, slightly bent outwards below costa, oblique to vein 6, then minutely dentate, slightly excurved to vein 3, then incurved; subterminal line red-brown, angled outwards at veins 7, 6, 4, 3, 2, and inwards at discal and submedian fold; a fine waved red-brown terminal line with slight ochreous lunules beyond

it at base of cilia. Hind wing whitish suffused and irrorated with red-brown, the veins and a waved terminal line brown; cilia paler; the underside whitish irrorated with brown, a slight discoidal spot and indistinct curved postmedial line on costal half.

Hab. Japan, Kiushiu, 1 ♀, Yokohama (*Jonas*, *Pryer*, *Manley*), 2 ♂, 5 ♀, type. *Exp.* 36–42 millim.

2642. Eupsilia satellitia.

Noctua satellitia, Linn. Syst. Nat. xii. p. 855 (1767); Esp. Schmett. iv. pl. 169. ff. 6-10; Hübn. Eur. Schmett., Noct. f. 182; Donovan, Nat. Hist. Brit. Ins. v. pl. 168; Dup. Lép. Fr. vii. p. 116, pl. 80. f. 4; Steph. Ill. Brit. Ent., Haust. ii. p. 163; Curt. Brit. Ent. pl. 635; Staud. Cat. Lep. pal. p. 210.

Phalæna transversa, Hüfn. Berl. Mag. iii. p. 418 (1769).

Scopelosoma brunnea, Lampa, Ent. Tijd. 1885, p. 76.

Scopelosoma albipuncta, Strand. Arch. naturv. Christian. xxv. 9. p. 14 (1903).

Head and thorax bright rufous slightly mixed with grey; antennæ white at base; abdomen pale rufous irrorated with brown. Fore wing bright rufous irrorated with brown; subbasal line brown defined by greyish on outer side, sinuous, from costa to submedian fold; antemedial line defined by greyish on inner side, erect, slightly

Fig. 153.—*Eupsilia satellitia*, ♂. ½.

sinuous; claviform and orbicular absent; medial line rather indistinct, arising from costa just beyond antemedial line, oblique to lower angle of cell, then incurved; reniform represented by a white lunulate or elliptical spot slightly defined by blackish and with white points beyond its upper and lower extremities; postmedial line defined by greyish on outer side, double on costal half, oblique from costa to vein 6, incurved at discal fold, angled outwards at veins 4, 3, then incurved; subterminal line yellowish defined on each side by rufous, waved, angled outwards at vein 7 and excurved at middle; a fine waved rufous terminal line with yellowish spots beyond it at base of cilia. Hind wing pale entirely suffused with fuscous brown; a waved dark terminal line; cilia ochreous white; the underside ochreous white irrorated with brown, the costal area slightly tinged with rufous, a dark discoidal lunule and oblique somewhat sinuous postmedial line.

Ab. 1. Browner.

Ab. 2. *satellitia*. Fore wing with the spots at end of cell yellow.

Ab. 3. *brunnea*. Browner, the discoidal spots yellow.

Hab. Britain, Leech Coll.; France, Sand Coll.; Denmark, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Italy; Scandinavia; S. Russia; Armenia; Asia Minor, Pontus; W. Turkestan, Ala Tau; W. Siberia, Altai. *Exp.* 40–48 millim.

Larva. Meyr. Brit. Lep. p. 64; Barrett, Lep. Brit. vi. p. 20, pl. 234. f. 3.

Dark brown, dorsal and subdorsal lines sometimes somewhat paler: spiracular line whitish, often reduced to spots on somites 1, 2, 5, and 11; head ochreous brown. Food-plants: Oak, Beech, &c.: often carnivorous and feeding on the larvæ of other Lepidoptera. 5–6.

2643. Eupsilia quadrilinea. (Plate CVII. fig. 28.)

Mesogona quadrilinea, Leech, P. Z. S. 1889, p. 519, pl. li. f. 1.

♀. Head and thorax greyish rufous suffused and irrorated with red-brown; palpi deep red-brown, whitish at tips; abdomen red-brown dorsally suffused with fuscous, the lateral fringes and anal tuft rufous. Fore wing red-brown suffused with purplish grey; subbasal line rufous, almost straight, from costa to submedian fold; antemedial, medial, and postmedial lines rufous, almost straight and erect; a slight dark point at lower angle of cell; subterminal line rather diffused, red-brown, angled outwards at veins 7, 6, 4, 3, 2; a fine waved red-brown terminal line with slight greyish lunules beyond it at base of cilia. Hind wing red-brown tinged with fuscous; a fine pale line at base of cilia; the underside pale slightly irrorated with brown, a small discoidal spot and sinuous postmedial line.

Hab. Japan, Yokohama (*Pryer*), 2 ♀ type. *Exp.* 44–46 millim.

2644. Eupsilia strigifera. (Plate CVI. fig. 13.)

Eupsilia strigifera, Butl. A. M. N. H. (5) iv. p. 363 (1879).

♂. Head and thorax rufous slightly mixed with grey; tegulæ with brown line just before tips which are grey; abdomen pale rufous irrorated with fuscous, the anal tuft tinged with ochreous. Fore wing rufous irrorated with fuscous and slightly tinged with greyish; subbasal line whitish, oblique, straight, from costa to submedian fold; antemedial and postmedial lines whitish, oblique, slightly incurved; slight blackish points at angles of cell; the veins of terminal area slightly streaked with whitish; subterminal line ochreous, oblique from costa to vein 7 where it is bent outwards, then incurved and ending on termen at vein 2; a fine pale line at base of cilia. Hind wing brownish ochreous, the cilia pale rufous with a slight pale line at base; the underside ochreous, the costal and terminal areas irrorated with brown, a curved postmedial line obsolete towards inner margin.

Hab. Japan, Yokohama (*Pryer*), 2 ♂ type. *Exp.* 38 millim.

Genus **PSECTRAGLÆA**, nov.

Type, *P. carnosa*.

Proboscis fully developed; palpi porrect to just beyond frons and fringed with long hair below; frons smooth, rounded; eyes large; head and thorax clothed with hair only and without crests; fore tarsi with curved claw-like spines on outer side of 1st joint; abdomen rather flattened, smoothly scaled and without crests. Fore wing rather broad, the termen obliquely curved; veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male pectinated.

A. Head and thorax carmine, wings tinged with carmine ..... *carnosa*.
B. Head, thorax, and fore wing red-brown ..... *olivata*.

2645. Psectraglæa carnosa.

Glæa carnosa, Grote, Can. Ent. ix. pp. 21, 70 (1877); Smith, Cat. Noct. N. Am. p. 220.

♀. Head fulvous tinged with carmine; antennæ white; thorax bright carmine; abdomen yellow slightly tinged with carmine. Fore wing olive-brown almost entirely suffused with bright carmine; the costal edge white towards base; faint traces of a waved antemedial line; orbicular and reniform faintly defined by yellow, the former rather oblique elliptical, the latter rather narrow; traces of an oblique

Fig. 154.—*Psectraglæa carnosa*, ♀. ½.

line from lower angle of cell to inner margin; very faint traces of a postmedial line excurved beyond cell; subterminal line indistinct, yellowish, slightly angled outwards at vein 7 and excurved at middle. Hind wing pale ochreous suffused with carmine except at base; the underside with slight discoidal spot.

Hab. U.S.A., Maine, Oldtown (*Fish*), 1 ♀ type, Massachusetts, New York. *Exp.* 50 millim.

2646. Psectraglæa olivata. (Plate CVI. fig. 14.)

Glæa olivata, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 120 (1874); Smith, Cat. Noct. N. Am. p. 221.

♀. Head and thorax red-brown mixed with grey; sides of palpi and frons blackish; antennæ whitish at base; tegulæ with slight

rufous terminal line; abdomen red-brown with slight dark irroration, the base greyish, the ventral surface and legs brighter rufous. Fore wing red-brown suffused with purplish grey and irrorated with black; subbasal line represented by a slight blackish striga from costa with a point beyond it in cell; antemedial line blackish slightly defined by grey on inner side, very oblique and slightly excurved below costa and at vein 1; claviform absent; orbicular and reniform large with pale grey annuli, the former round, the latter elliptical; postmedial line pale grey with black points on its inner edge, excurved from costa to vein 4, then oblique; subterminal line indistinct, pale with slight dark suffusion on inner side, angled outwards at vein 7 and excurved at middle, the area beyond it somewhat paler; a terminal series of brown lunules. Hind wing red-brown, the base slightly paler, the terminal area rather darker; cilia rufous, whitish at tips; the underside pale tinged with pink and irrorated with brown, a small discoidal spot and slightly sinuous postmedial line.

Hab. U.S.A., California, 1 ♀ type. *Exp.* 42 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 324 (1899).

Head bilobed, broader than high, shining brown with broad dark brown curved vertical band and distinct reticulations. Body greenish thickly mottled with brown; dorsal line narrow, white; substigmatal line broad, filled with red mottlings; cervical shield brown, not polished, slightly darker than body, cut by white dorsal and subdorsal lines; anal plate concolorous with body; spiracles white with black rims. Food-plants: Oak and Wild Cherry.—H. G. D.

Sect. II. Antennæ of male minutely serrate and fasciculate.

2647. Psectraglæa pilifera.

Agrostis pilifera, Wlk. x. 343 (1856).

♂. Head and thorax deep reddish brown; abdomen rather greyer brown, the hair on claspers rufous. Fore wing dark reddish

Fig. 155.—*Psectraglæa pilifera*, ♂. ½.

brown, the costal area uniformly tinged with blackish; the subbasal, ante- and postmedial lines, claviform and orbicular obsolete, the reniform represented by a faint dark mark; subterminal line very indistinct, brown, angled outwards at vein 7 and inwards in discal fold; a terminal series of slight black points. Hind wing rufous thickly irrorated and the terminal area suffused with dark

brown or nearly uniformly suffused with dark brown ; a fine brown terminal line ; cilia ochreous or dark brown ; the underside ochreous suffused with brown especially on the veins and costal area, or uniformly suffused with dark brown.

Hab. Tristan da Cunha, 3 ♂ type. *Exp.* 38–46 millim.

Genus **XANTHOLEUCA.**

	Type.
Hoporina, Blanch. Brullé, Hist. Nat. Ins. iii. p. 513 (1840); Boisd. Ind. Meth. p. 147 (1840)	*croceago.*
Lampetia, Curtis, Guide Brit. Ins. p. 85 (1830), non descr. (nec Steph. 1829) ; id. Entom. Mag. i. p. 189 (1833)	*croceago.*
Xantholeuca, Steph. Ill. Brit. Ent., Haust. iii. pp. 67, 329, 333 (1831)	*croceago.*

Proboscis fully developed ; palpi thickly fringed with hair above and below, the 2nd joint obliquely porrect, the 3rd rather downcurved and forming a beak extending well beyond the large frontal tuft ; eyes rather small, rounded ; antennæ of male ciliated ; head and thorax clothed with hair and hair-like scales, the tegulæ produced to a slight dorsal ridge, the prothorax with large triangular crest ; pectus clothed with long hair ; abdomen broadly flattened, with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the apex somewhat produced and acute, the termen evenly curved ; veins 3 and 5 from near angle of cell ; 6 from upper angle ; 9 from 10 anastomosing with 8 to form the areole ; 11 from cell. Hind wing with veins 3, 4 from angle of cell ; 5 obsolescent from just below middle of discocellulars ; 6, 7 from upper angle ; 8 anastomosing with the cell near base only.

A. Fore wing with the subterminal line incurved at discal fold ; hind wing not tinged with pink	*croceago.*
B. Fore wing with the subterminal line angled inwards at discal fold ; hind wing tinged with pink	*sericea.*

2648. Xantholeuca croceago.

Noctua croceago, Schiff. Wien. Verz. p. 86 (1776) ; Fabr. Mant. Ins. ii. p. 159 (1787) ; Hübn. Eur. Schmett., Noct. f. 189 ; Dup. Lép. Fr., Suppl. vii. p. 447, pl. 128. f. 1 ; Frr. Neue Beitr. vi. pl. 586 ; Steph. Ill. Brit. Ent., Haust. iii. p. 67 ; Staud. Cat. Lep. pal. p. 208.

Phalæna aurantiago, Don. Nat. Hist. Brit. Ins. v. pl. 150 (1796).

Noctua fulvago, Esp. Schmett. iv. pl. 176. ff. 3, 4 (1791) ; Hübn. Beitr. Ges. Schmett. i. p. 12, pl. i. f. F (nec Linn.).

Hoporina corsica, Mab. Ann. Soc. Ent. Fr. 1867, p. 641.

Head and thorax orange-red, the head and tegulæ mixed with brown, the patagia sometimes with some dark scales on upper edge ; pectus with some yellowish hair ; abdomen white tinged with yellow except at base, and slightly irrorated with red and with faint dorsal bands. Fore wing orange, thickly irrorated with fiery red, the costa with series of small white streaks to postmedial line ; subbasal line indistinct, brownish slightly defined by yellow on outer side, curved, from costa to submedian fold : antemedial line indistinct, brownish defined by yellow on inner side, with dark points on it at median nervure, submedian fold, and on vein 1, angled inwards in cell and outwards in submedian fold ; claviform absent ; orbicular and reniform with reddish centres and yellowish

annuli defined by red, the former erect elliptical, the latter constricted at middle and extending to below the cell; medial line dark, oblique from costa to lower angle of cell, then inwardly oblique; a slight dark streak on medial part of inner margin; postmedial line indistinct, defined by yellowish on outer side, bent outwards below costa, then dentate and produced to black points on the veins, oblique below vein 4; the veins of terminal area with

Fig. 156.—*Xantholeuca croceago*, ♂. ½.

slight dark streaks; subterminal line dark, slightly sinuous; a fine crenulate terminal line. Hind wing white with a faint yellowish tinge; the underside with the costal area sparsely irrorated with black and rufous towards apex, a slight discoidal lunule, faint traces of a sinuous postmedial line and some dark points on apical half of termen.

Ab. 1. *corsica*. Head, thorax, and fore wing pale flesh-pink, the last with the markings less distinct.

Hab. Britain, Leech Coll.; France; Germany, Zeller and Leech Colls.; Austria, Zeller and Leech Colls.; Hungary; Switzerland, Frey and Leech Colls.; Spain; Corsica; Italy; Algeria; S. Sweden; Balkan States; Russia; Armenia; Asia Minor, Pontus. *Exp.* 36–38 millim.

Larva. Meyr. Lep. Brit. p. 60; Barrett, Brit. Lep. vi. p. 3, pl. 233. f. 1.

Pale orange-ochreous with darker freckles; dorsal V-shaped brown marks on somites 4–11; dorsal and subdorsal lines paler with dark edges. Food-plant, Oak. 5–6.

2649. **Xantholeuca sericea.** (Plate CVII. fig. 29.)

Hoporina sericea, Butl. A. M. N. H. (5) i. p. 168 (1878); id. Ill. Het. B. M. ii. p. 31, pl. 30. f. 10; Staud. Cat. Lep. pal. p. 208.

Head and thorax yellow mixed with fiery red; tegulæ with the tips whitish; patagia with a few brown scales near upper edge; abdomen yellowish white slightly tinged with red and irrorated with a few dark scales, faint traces of darker dorsal bands. Fore wing orange thickly irrorated with fiery red, a series of slight white streaks on costa; subbasal line indistinct, brownish slightly defined by yellow on outer side, curved, from costa to submedian fold; antemedial line indistinctly double, brownish filled in with orange, oblique, waved and with slight dark points on outer line at median nervure, submedian fold, and vein 1; orbicular and reniform with orange annuli slightly defined by red, their centres irrorated with

red, both strongly constricted at middle and the latter extending to well below the cell; a diffused dark medial line, oblique from costa to median nervure, then inwardly oblique; postmedial line indistinct, red defined by orange on outer side beyond which is a brownish maculate line, bent outwards below costa and incurved below vein 4; subterminal line orange, slightly defined by red on inner side, somewhat angled outwards at vein 7, angled inwards in discal fold to the postmedial line, then excurved; a series of slight dark points just before termen. Hind wing yellowish white slightly suffused with pink except the cell and costal area; cilia pale yellow; the underside yellowish white slightly tinged with pink, a reddish discoidal spot irrorated with brown, a sinuous reddish postmedial line and some points on termen.

Hab. E. Siberia, Ussuri; Japan, Yokohama (*Jonas*, *Manley*, *Pryer*), 1 ♂, 7 ♀, type. *Exp.* 40 millim.

Genus CONISTRA.

	Type.
Conistra, Hübn. Verz. p. 229 (1827)	*veronicæ.*
Orrhodia, Hübn. Verz. p. 231 (1827)	*vau-punctatum.*
Ochona, Hübn. Verz. p. 232 (1827)	*fragariæ.*
Dasycampa, Guen. Ann. Soc. Ent. Fr. vi. p. 224 (1837)	*rubiginea.*
Dichagramma, Grote, Proc. Ent. Soc. Phil. ii. p. 439 (1864).	*valceri.*
Glæa, Hübn. Tent. ined.	*vaccinii.*

Proboscis fully developed; palpi porrect to just beyond the large frontal tuft, fringed with hair below; frons smooth; eyes large, rounded; antennæ of male ciliated; head and thorax clothed with hair only, the tegulæ produced to a slight dorsal ridge, the prothorax with indistinct ridge-like crest; pectus clothed with long hair; abdomen very broad and much flattened, with rough hair at base and lateral fringes of hair but without crests. Fore wing with the apex somewhat produced and acute, the termen waved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male with lateral tufts of scales on the joints, longest at base, and with very long bristles as well as cilia.

2650. Conistra evelina.

Dasycampa evelina, Butl. A. M. N. H. (5) iv. p. 363 (1879).

Head and thorax pale rufous tinged with greyish and slightly mixed with fuscous; antennæ whitish at base; abdomen ochreous whitish irrorated with fuscous and tinged with rufous towards extremity. Fore wing pale rufous suffused with whitish, the veins with fine white streaks, the costal edge ochreous; traces of a pale curved subbasal line from costa to submedian fold; antemedial line indistinctly double filled in with whitish, oblique, waved; orbicular and reniform with whitish annuli, the former round or elliptical; a brown medial shade oblique from costa to lower angle of cell where

it darkens the lower part of reniform, then incurved; postmedial line indistinctly double filled in with whitish, bent outwards below costa, slightly incurved at discal fold and strongly below vein 4; subterminal line indistinct, pale, defined on inner side by a series of small fuscous spots, angled outwards at vein 7 and excurved at

Fig. 157.—*Conistra evelina*, ♂. ½.

middle; a terminal series of slight brown lunules. Hind wing greyish suffused and irrorated with fuscous, the terminal area deep fuscous; cilia pale rufous; the underside ochreous white irrorated with brown, a discoidal lunule and sinuous postmedial line.

Hab. Japan, Yokohama (*Pryer*), 5 ♂, 4 ♀, type. *Exp.* 36 millim.

Sect. II. Antennæ of male with long fasciculate cilia.

A. Hind wing with the costal area and postmedial and terminal bands flesh-red ..... *castaneofasciata.*
B. Hind wing grey tinged with brown ... . *eriophora.*
C. Hind wing wholly dark ..... *ciliata.*

2651. Conistra castaneofasciata.

Oporina castaneo-fasciata, Motsch. Ét. Ent. 1860, p. 34.
Dasycampa fornax, Butl. A. M. N. H. (5) i. p. 168 (1878); id. Ill. Het. B. M. iii. p. 15, pl. 44. f. 11; Staud. Cat. Lep. pal. p. 210.

Head and thorax orange suffused with fiery red; tegulæ at base and tips and metathorax with small fuscous spots; tibiæ and 1st joint of tarsi banded with fuscous; abdomen fiery red irrorated with fuscous, greyish towards base. Fore wing orange suffused

Fig. 158.—*Conistra castaneofasciata*, ♂. ½.

with deep rufous; a black point at base; subbasal line represented by double black striæ from costa and cell with a black point beyond them in cell: antemedial line double, waved, oblique, rather punctiform and with black points before it on median nervure and

vein 1; orbicular and reniform slightly defined by rufous, the former rather small, round, with black point in centre, the latter figure-of-8-shaped with one or two black points in upper part and its lower part filled in with black; a rather diffused medial line, oblique from costa to lower angle of cell, then waved; postmedial line double, rather punctiform, bent outwards below costa, slightly incurved at discal fold and strongly below vein 4, some rufous suffusion beyond it and a series of black points on the veins; subterminal line defined by a series of small rufous spots on inner side and more or less rufous suffusion beyond it on terminal area, slightly angled outwards at vein 7 and excurved at middle; a terminal series of small black lunules and fine waved rufous line; cilia with a series of blackish spots at tips. Hind wing pale flesh-red suffused with fuscous brown leaving the costal area and the areas beyond the diffused postmedial and subterminal bands pale; a waved dark terminal line; cilia pale rufous; the underside pale rufous, the costal area darker, slight dark irroration, a discoidal lunule and somewhat sinuous postmedial line.

Hab. Japan, Yezo (*Pryer*), 1 ♀, Tokio (*Maries*), 1 ♀, Yokohama (*Jonas, Pryer*), 3 ♂, 5 ♀, type *fornax*. *Exp.* 34–40 millim.

*2652. Conistra eriophora. (Plate CVII. fig. 31.)

Orrhodia eriophora, Püng. Iris, xiv. p. 186, pl. iii. f. 16 (1901).

Head, thorax, and abdomen grey. Fore wing ash-grey, the medial area tinged with rufous; a black streak below base of cell; subbasal line represented by a black striga from costa; antemedial line oblique, waved, from costa to submedian fold, then angled inwards on vein 1; claviform minute, defined by black connected with the basal streak; orbicular and reniform small, defined by black, the former very oblique and acute at lower extremity; a dark medial shade, excurved from costa to median nervure; postmedial line double at costa, then single, bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line pale, defined on inner side by a series of small dentate black marks, slightly angled outwards at vein 7; a slight dark terminal line. Hind wing grey tinged with brown, with dark discoidal lunule; the cilia white; the underside pale grey, with dark discoidal lunule and sinuous postmedial line.

Hab. Mongolia, Aksu, type† ♂ ♀ in Coll. Püngeler. *Exp.* 34 millim.

*2653. Conistra ciliata.

Orrhodia ciliata, Staud. Rom. Mém. vi. p. 516 (1892); id. Cat. Lep. pal. p. 209.

Head, thorax, and fore wing ochreous to grey-brown or greyish chocolate-brown in male, or reddish yellow in female; the subbasal and antemedial lines only present in the darker specimens, defined

on each side by brown; orbicular and reniform with slight dark centres and pale annuli; medial shade oblique from costa to median nervure; postmedial line more or less distinct, with dark edges, bent outwards below costa, incurved at discal fold and below vein 4; subterminal line defined on inner side by black points variable in number, somewhat angled outwards at vein 7 and excurved at middle. Hind wing grey-black, somewhat paler at base; cilia yellowish white, sometimes with dark line near base; underside dirty whitish, the terminal area irrorated with black, a dark discoidal spot and postmedial line sometimes present.

Hab. E. Siberia, Ussuri. *Exp.* 31–33 millim. This species is unknown to me.

Sect. III. Antennæ of male minutely ciliated.

A. Hind wing with the termen and cilia bright yellow; abdomen banded with yellow ..... *fragariæ.*
B. Hind wing with the termen and cilia not yellow; abdomen not banded with yellow.
a. Fore wing with the ante- and postmedial lines double, more or less waved or dentate.
a^1. Fore wing with more or less prominent pale streaks on the veins.
a^2. Fore wing with black spots in reniform.
a^3. Head rufous ..... *erythrocephala.*
b^3. Head concolorous.
a^4. Fore wing with the postmedial area suffused with red-brown..... *gallica.*
b^4. Fore wing with the postmedial area concolorous except at costa ..... *silene.*
b^2. Fore wing without black spots in reniform.
a^3. Fore wing narrow.
a^4. Hind wing uniformly suffused with fuscous..... *silene* ab. *immaculata.*
b^4. Hind wing white with diffused dark subterminal band..... *acutula.*
b^3. Fore wing broader.
a^4. Fore wing with the costal area suffused with grey ..... *canicostata.*
b^4. Fore wing with the costal area concolorous.
a^5. Fore wing whitish grey to pale purplish red..... *politina.*
b^5. Fore wing grey-brown to pale red-brown ..... *vernicæ.*
c^5. Fore wing bright red-brown to purple-brown.
a^6. Fore wing with the apex hardly produced..... *vaccinii.*
b^6. Fore wing with the apex distinctly produced and acute ..... *ardescens.*
d^5. Fore wing deep purple-brown to greyish fuscous ..... *ligula.*
b^1. Fore wing without pale streaks on the veins.
a^2. Fore wing with white spot at lower angle of cell ..... *albipuncta.*

b^2. Fore wing without white spot at lower angle of cell.
a^3. Fore wing with the orbicular defined by black ..... *torrida.*
b^3. Fore wing with the orbicular not defined by black.
a^4. Fore wing bright rufous to purple-brown ..... *rubiginea.*
b^4. Fore wing grey-white to brownish ochreous or fuscous grey ..... *staudingeri.*
c^4. Fore wing whitish tinged with ochreous ..... *daubei.*
b. Fore wing with the ante- and postmedial lines single.
a^1. Fore wing with the orbicular large, oblique elliptical.
a^2. Fore wing with the ante- and postmedial lines evenly curved ..... *inulta.*
b^2. Fore wing with the antemedial line waved, the postmedial line dentate ..... *viatica.*
b^1. Fore wing with the orbicular small or obsolete.
a^2. Fore wing with the ground-colour not orange or crimson.
a^3. Fore wing with medial line oblique from costa to lower angle of cell.
a^4. Fore wing with the antemedial line excurved ..... *signata.*
b^4. Fore wing with the antemedial line straight or incurved.
a^5. Fore wing with the claviform present .... *tristigmata.*
b^5. Fore wing with the claviform absent.
a^6. Fore wing with the postmedial line dark, minutely dentate.
a^7. Fore wing with the medial line distinct.
a^8. Fore wing bright rufous ... *valceri.*
b^8. Fore wing greyish rufous ... *sidus.*
c^8. Fore wing bright chestnut-red..... ..... *sidus* ab. *vinulenta.*
b^7. Fore wing with the medial line almost obsolete..... *colorado.*
b^6. Fore wing with the postmedial line pale, even ..... *morrisoni.*
b^3. Fore wing with the medial line absent... *devia.*
b^2. Fore wing with the ground-colour orange.
a^3. Fore wing with the postmedial line distinct, dark, even.
a^4. Fore wing with the antemedial line almost straight..... *indirecta.*
b^4. Fore wing with the antemedial line slightly angled outwards in cell ... *moffatiana.*
b^3. Fore wing with the postmedial line rufous with short dark streaks beyond it on the veins..... *pettiti.*
c^2. Fore wing crimson suffused with silvery grey ..... *ceromatica.*

2654. Conistra fragariæ.

Bombyx fragariæ. Esp. Schmett. iii. pl. 86. f. 3 (1789), & Suppl. 3, p. 40 Staud. Cat. Lep. pal. p. 208.
Noctua domiduca. Borkh. Eur. Schmett. iv. p. 113 (1792).
Noctua orbona, Rossi, Mant. Faun. Etruria, ii. p. 23 (1794); Hübn. Eur. Schmett., Noct. ff. 104, 604.
Cerastis serotina, Ochs. Schmett. Eur. iv. p. 85 (1816); Frr. Neue Beitr. pl. 435.

Head and thorax rufous mixed with grey and dark brown; antennæ pale ochreous; tegulæ with bright rufous medial line; tibiæ and tarsi red-brown; abdomen yellow banded with black, the ventral surface rufous slightly irrorated with fuscous. Fore wing rufous more or less strongly suffused with grey and slightly irrorated with black, the veins of terminal half pale; antemedial line pale, very oblique from costa to above inner margin; orbicular and reniform large with grey annuli, the former rather oblique elliptical, the latter somewhat constricted at middle; an indistinct curved

Fig. 159.—*Conistra fragariæ*, ♂. ½.

medial rufous shade; postmedial line indistinct, grey, slightly angled outwards below costa and excurved at discal fold, then incurved; subterminal line grey-white defined by brown on inner side and almost straight; a terminal series of slight blackish points; cilia with a fine waved white line through them. Hind wing yellow almost wholly suffused with fuscous except on inner area and termen, the terminal area darker with narrow yellow terminal band with irregularly waved inner edge; cilia yellow; underside yellow, the costal and terminal area tinged with rufous, a large black discoidal lunule showing through to upperside and sinuous postmedial line.

Hab. Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland; Italy; Rumelia; S.E. Russia; Siberia; Amurland; Japan, Yokohama (*Jonas*, *Pryer*, *Manley*). 4 ♂, 2 ♀. *Exp.* 54–60 millim.

Larva. Kirby, Butt. & Moths Eur. p. 190; Hffm. Raup. p. 119, pl. 32. f. 6.

Orange with brown head and black thoracic shield. Food-plants: Grasses, often cannibal. 5–7.

2655. Conistra erythrocephala.

Noctua erythrocephala, Schiff. Wien. Verz. p. 77 (1776); Fabr. Mant. Ins. ii. p. 176 (1787); Hübn. Eur. Schmett., Noct. f. 176; Dup. Lép. Fr. vi. pl. 79. f. 3; Staud. Cat Lep. pal. p. 208.
Noctua glabra, Schiff. Wien. Verz. p. 314 (1776); Hübn. Eur. Schmett., Noct. f. 438; Dup. Lép. Fr. vi. pl. 79. f. 2; Frr. Neue Beitr. v. pl. 436.
Noctua vaccinii, Esp. Schmett. iv. pl. 162, ff. 3–4 (1791), nec Linn.
Noctua spadicea, Borkh. Eur. Schmett. iv. p. 748 (1792), nec Schiff.

Head and thorax bright rufous; sides of palpi and frons dark red-brown; antennæ whitish at base; pectus clothed with grey and rufous hair; legs dark red-brown; abdomen pale rufous irrorated with fuscous, the base greyish, the anal tuft ochreous, the ventral surface grey irrorated with black and with sublateral black spots on three terminal segments. Fore wing grey suffused with rose-red, the veins grey; subbasal line double, waved, from costa to submedian fold; antemedial line double, waved, oblique, angled inwards to double black points on median nervure and vein 1; claviform represented by a slight brown spot on the outer antemedial line; orbicular and reniform grey with whitish annuli defined by rufous, the former rather small, round, the latter with black points on upper part of outer edge and its lower part filled in with black broken up by the veins, these black markings sometimes almost obsolete; an indistinct diffused waved medial line oblique from costa to lower angle of cell, then inwardly oblique; postmedial line double, bent outwards below costa, then minutely waved and produced to black points on the veins, incurved at discal fold and below vein 4, some grey points beyond it on costa; subterminal line indistinct, whitish, defined on inner side by slight dentate rufous marks, angled outwards at vein 7 and excurved at middle, a fine waved brown terminal line; cilia rufous with fine pale waved line through them. Hind wing fuscous brown, the cilia brown at base, whitish at tips; the underside whitish tinged with rufous and irrorated with brown, a dark discoidal lunule and sinuous postmedial line.

Ab. 1. *glabra*. Thorax and fore wing deep rufous to dark purple-brown, the latter with the costal area, the base of inner area, and a subterminal band diffused; the orbicular and reniform grey-white.

Hab. Britain, Leech Coll.; France, Sand Coll.; Denmark; Germany, Zeller and Leech Colls.; Austria; Hungary, Leech Coll.; Switzerland, Frey Coll.; Italy; ? Sicily; Russia, Livonia, Zeller Coll.; Asia Minor, Pontus. *Exp.* 34–42 millim.

Larva. Meyr. Brit. Lep. p. 65; Barrett, Lep. Brit. vi. p. 11; Hffm. Raup. p. 119, pl. 32. f. 7.

Fuscous; spiracular line whitish. Food-plants: *Gallium*, *Plantago*, &c. 5.

2656. Conistra gallica.

Cerastis gallica, Led. Noct. Eur. p. 227 (1857); Staud. Cat. Lep. pal. p. 209.
Cerastis silene, var., Herr.-Schäff. Eur. Schmett., Noct. f. 571 (nec Schiff.).

Head and thorax bright rufous mixed with grey; sides of palpi and frons fuscous; abdomen grey suffused with pale rufous and slightly irrorated with brown, the ventral surface with slight sublateral black spots on three terminal segments. Fore wing bright purplish rufous suffused with grey especially on basal area and costal area to postmedial line, and with slight dark irroration, the veins with slight white streaks; subbasal line represented by slight striæ from costa and cell with black point beyond them in cell; antemedial line indistinctly double, oblique, waved, angled outwards below costa; orbicular and reniform with grey centres and grey annuli slightly defined by brown, the former small, round, with slight black points on inner or lower parts of centre, the latter narrow with some black in outer and lower part of centre broken up into spots by the white veins; a red-brown medial shade, oblique from costa to lower angle of cell; postmedial line double, rufous filled in with grey, bent outwards below costa then minutely waved, excurved to vein 4, then incurved, the area beyond it rather deeper rufous; subterminal line grey defined on inner side by slight brown spots, somewhat angled outwards at vein 7 and excurved at middle; a series of slight black points defined on inner side by grey lunules just before termen; cilia rufous with fine waved white lines at base and middle. Hind wing grey suffused with brown; cilia whitish; the underside grey-white irrorated with brown, the costal area tinged with rufous, a large blackish discoidal lunule, indistinct curved postmedial line and waved dark terminal line.

Hab. Central France, Frey and D'Emmick Colls., Pyrenees. *Exp.* 34 millim.

2657. Conistra silene.

Noctua silene, Schiff. Wien. Verz. p. 85 (1776); Fabr. Mant. Ins. ii. p. 141 (1787); Hübn. Eur. Schmett., Noct. f. 175; Dup. Lép. Fr. vi. p. 102, pl. 79. f. 5.
Bombyx vau-punctatum, Esp. Schmett. iii. p. 385, pl. 76. f. 4 (1786); Staud. Cat. Lep. pal. p. 209.
Noctua C-nigrum, Vill. Linn. Ent. pl. 5. f. 13 (1789), nec Linn.
Orrhodia immaculata, Staud. Cat. Lep. Eur. p. 118 (1871).

Head and thorax rufous more or less strongly tinged with grey and irrorated with fuscous; sides of palpi and frons blackish; abdomen pale rufous irrorated with fuscous, the base greyish, sublateral black spots on three medial segments. Fore wing rufous suffused with grey and with slight dark irroration, the veins with fine whitish streaks; subbasal line represented by a slight striga from costa with a small black spot beyond it in cell; antemedial line almost obsolete except towards costa, double, waved, oblique; orbicular and reniform with fine whitish annuli, the former

U-shaped, open above and with black lunule in lower part, the latter filled in with black broken up into spots by the white veins except upper part of inner portion; medial shade indistinct, brown, oblique from costa to lower angle of cell; postmedial line very indistinct, double, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, grey with red-brown patch before it at costa, slightly angled outwards at vein 7 and excurved at middle; a series of small blackish points just before termen; cilia rufous with fine waved white lines at base and middle. Hind wing grey slightly tinged with pink and suffused with brown; cilia whitish tinged with rufous; the underside whitish irrorated with brown, the costal area suffused with rufous, a large blackish discoidal spot and more or less developed curved postmedial line.

Ab. 1. *immaculata*. Fore wing without the black marks in the stigmata.

Hab. France, Sand Coll.; Germany, Zeller and Leech Colls.; Austria, Zeller and Frey Colls.; Hungary, Leech Coll.; Switzerland, Frey and Leech Colls.; Spain, Aragon, ? Andalusia; N. Italy; ? Sicily; S. Sweden; S.E. Russia. *Exp.* 34–36 millim.

Larva. Kirby, Butt. & Moths Eur. p. 189; Hffm. Raup. p. 119.

Dark cinnamon-brown, whitish below; dorsal and subdorsal lines indistinct, pale; oblique black stripes forming angles on dorsum of somites; thoracic shield black with two white lines. Food-plants: low herbs and *Prunus padus*.

2658. Conistra acutula. (Plate CVI. fig. 15.)

Orrhodia acutula, Staud. Iris, iv. p. 302 (1891); id. Cat. Lep. pal. p. 209.
Orrhodia scortea, Staud. Iris, x. p. 288, pl. 9. f. 17 (1897).

Head and thorax grey-white mixed with red-brown and fuscous; palpi more rufous; sides of frons blackish; antennæ white at base; tibial spurs ringed black and white; abdomen grey irrorated with brown and tinged with rufous towards extremity, the ventral surface rufous with diffused fuscous bands. Fore wing grey thickly irrorated and striated with fuscous, the costal half tinged with rufous to subterminal line, the veins streaked with white; subbasal line represented by faint dark striæ from costa and cell with slight point beyond them in cell; antemedial line double, dark, oblique, minutely waved, excurved below cell; orbicular and reniform with fine white annuli slightly defined by rufous, the former oblique elliptical, the latter constricted at middle and with its lower part filled in with dark brown; a diffused dark slightly sinuous medial line, oblique from costa to median nervure, then inwardly oblique; postmedial line double, slightly bent outwards below costa, then minutely waved, oblique from vein 4 to submedian fold, then erect; a diffused grey subterminal band, a triangular brown patch before it at costa with slight white points on costa; the subterminal line defined by a series of slight dark points on inner side and slightly by brown on outer; a slight waved line just before termen; cilia

brown with two fine white lines through them. Hind wing white sparsely irrorated with brown; a brown shade along median nervure; traces of a sinuous postmedial line; a diffused subterminal band rather broken up into spots; a fine waved brown terminal line; cilia white at base followed by a fine brown line and pale pink tips; the underside white irrorated with brown, a discoidal point and rufous postmedial line from costa to vein 4.

Ab. 1. *scortea*. Fore wing dark grey without the brown tinge.

Hab. Palestine, 1 ♂, 1 ♀. *Exp.* 36 millim.

*2659. Conistra canicostata.

Orrhodia canicostata, Græs. Berl. ent. Zeit. 1888, p. 358; Staud. Cat. Lep. pal. p. 209.

♂. Head and thorax grey-brown; palpi red-brown; abdomen yellowish grey; pectus and ventral surface of abdomen red-brown; legs yellowish. Fore wing red-brown mixed with yellow-brown and irrorated with grey, the costal area suffused with grey to postmedial line, the veins with grey streaks; antemedial line oblique, waved, defined by grey on outer side; orbicular and reniform with grey annuli; medial line oblique from costa to median nervure; postmedial line defined by grey on inner side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line represented by a series of grey striæ in the interspaces slightly defined by brown on inner side, somewhat angled outwards at vein 7 and excurved at middle; cilia yellowish at base, grey-brown at tips. Hind wing fuscous, yellowish at base; a dark discoidal spot; cilia reddish yellow; the underside dirty yellowish white irrorated with dark grey and reddish, a slight dark discoidal spot and diffused postmedial line.

Hab. E. Siberia, Ussuri. *Exp.* 33 millim. This species is unknown to me.

2660. Conistra politina. (Plate CVI. fig. 16.)

Orrhodia politina, Staud. Stett. ent. Zeit. 1888, p. 35; id. Cat. Lep. pal. p. 209.

Orrhodia subspadiceana, Staud. Stett. ent. Zeit. 1888, p. 35.

Head pale rufous; sides of palpi and frons with some fuscous; antennæ with the shaft grey; thorax grey-white irrorated with brown; pectus tinged with rufous; legs irrorated with fuscous; abdomen pale rufous, the base of dorsum grey. Fore wing grey-white slightly irrorated with fuscous, the veins with slight pale streaks; subbasal line represented by slight double striæ from costa; antemedial line indistinct, double, oblique, waved; orbicular and reniform with slight grey annuli faintly defined by brown, the former somewhat oblique elliptical, the latter open above, constricted at middle and with its lower part filled in with fuscous; a rather diffused dark medial line, oblique from costa to lower angle of cell,

then incurved ; postmedial line rather indistinct, double, bent outwards below costa, then minutely waved, slightly incurved at discal fold and strongly below vein 4 ; subterminal line very indistinct, pale, defined on inner side by a blackish bar from costa, then by a series of small spots, slightly angled outwards at vein 7 and excurved at middle ; a series of slight dark points just before termen or slight waved line ; cilia grey tinged with purplish red, with a fine whitish line through them. Hind wing yellowish white suffused and irrorated with brown except the termen ; cilia white, tinged with brown at tips on apical half ; the underside white slightly irrorated with brown, a dark discoidal spot, indistinct sinuous postmedial line, and traces of diffused subterminal line.

Ab. 1. *subspadiceana*. ♂. Thorax and fore wing pale chestnut-red, the latter with the markings very indistinct except the subterminal spots. ♀. Thorax and fore wing purplish red, the latter with the markings distinctly defined by grey, the veins streaked with grey.

Hab. W. Turkestan, Turkomania, 2 ♂, 2 ♀ ; Ferghana. *Exp.* 40 millim.

2661. Conistra veronicæ.

Noctua veronicæ, Hübn. Eur. Schmett., Noct. f. 541 (1827) ; Staud. Cat. Lep. pal. p. 208.
Noctua dolosa, Hübn. Eur. Schmett., Noct. f. 632 (1827).
Cerastis intricata, Boisd. Ind. Meth. p. 148 (1840) ; Dup. Lép. Fr., Suppl. iv. p. 89, pl. 58. f. 2 ; Guen. Noct. i. p. 379, pl. 8. f. 13.

Head and thorax rufous mixed with greyish ; palpi at sides deep rufous ; sides of frons blackish ; tibiæ and tarsi fuscous with pale rings ; abdomen brownish grey irrorated with fuscous, the ventral surface with sublateral black spots on three medial segments. Fore wing greyish suffused with rufous and often striated with brown or with black irroration, the veins with slight grey streaks ; subbasal line represented by slight double striæ from costa and cell ; antemedial line double, oblique, waved, angled outwards below costa ; orbicular and reniform with greyish annuli slightly defined by brown, their lower parts filled in with brown, the former oblique elliptical, the latter constricted at middle ; medial line rather diffused, waved, oblique from costa to lower angle of cell ; postmedial line double, bent outwards below costa, then minutely waved, incurved below vein 4 ; subterminal line indistinct, pale, defined on inner side by a brown bar from costa, then by small rufous lunules, slightly angled outwards at vein 7 and excurved at middle ; a series of dark points just before termen ; cilia brown with a fine waved pale line through them. Hind wing fuscous brown with faint discoidal lunule and diffused subterminal band ; a waved dark terminal line ; cilia pale rufous ; the underside grey irrorated with fuscous, the costal area suffused with rufous, a dark discoidal lunule and indistinct diffused waved postmedial and subterminal lines.

Hab. S. France; Germany, Zeller Coll.; Austria, Leech Coll.; Hungary, Frey and Leech Colls.; Switzerland; Italy; Macedonia; Asia Minor, Pontus. *Exp.* 36–40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 189; Hffm. Raup. p. 119.

Dark brown with very fine pale dorsal and subdorsal lines; head black. Food-plants, various low herbs.

2662. Conistra vaccinii.

Noctua vaccinii, Linn. Faun. Succ. p. 320 (1761); Esp. Schmett. iv. p. 92, pl. 161. ff. 1–6; Hübn. Eur. Schmett., Noct. f. 177; Dup. Lép. Fr. vi. pl. 79. f. 1; Frr. Neue Beitr. i. pl. 46; Steph. Ill. Brit. Ent., Haust. ii. p. 161; Staud. Cat. Lep. pal. p. 209.

N. [illegible], Schiff. Wien. Verz. p. 86 (1776); Hübn. Eur. Schmett., Noct. f. 179 (1827); Steph. Ill. Brit. Ent., Haust. ii. p. 162; Cappel Tijds. v. Ent. xlii. p. 39, pl. 2. f. 5.

Orrhodia mixta, Staud. Cat. Lep. Eur. p. 118 (1871).

Orrhodia sebdouensis. Aust. Le Nat. 1880, p. 221.

Orrhodia signata, Klem. Spraw. Kom. Fizyogr. xxxiii. p. 141 (1898).

Head and thorax bright chestnut; abdomen pale rufous. Fore wing bright chestnut; subbasal line formed of white scales, slight, waved, from costa to submedian fold; antemedial line indistinct, double, with some white scales on it, oblique, waved; orbicular and reniform large, with slight pale annuli defined by deeper rufous, the former oblique elliptical, the latter somewhat constricted at middle and with its lower part filled in with fuscous; a slight rufous medial line, oblique from costa to lower angle of cell, then incurved; postmedial line indistinct, double, bent outwards below costa, then minutely waved and with slight white points on the veins, incurved at discal fold and below vein 4, some minute whitish points beyond it on costa; subterminal line very indistinct, pale, defined on inner side by a series of small rufous spots, slightly angled outwards at vein 7 and excurved at middle, the veins beyond it with slight dark streaks; a slight waved terminal rufous line; cilia rufous with a slight brown line through them. Hind wing pale rufous irrorated and suffused with fuscous brown, an indistinct sinuous postmedial line and diffused subterminal band; cilia grey tinged with pale rufous; the underside pale irrorated with brown, the costal area suffused with rufous, a slight dark discoidal lunule, sinuous postmedial line and slight subterminal shade except towards apex.

Ab. 1. *sebdouensis*. Fore wing with the lines hardly traceable, subterminal and terminal series of black points.—Algeria.

Ab. 2. *signata*. Fore wing with the stigmata and subterminal spots black.

Ab. 3. *spadicea*. Fore wing paler rufous, the lines distinct, pale defined by red-brown or black.

Ab. 4. *mixta*. Fore wing irrorated with grey-white, the veins streaked with grey-white, some pale suffusion before subterminal line.

Hab. Britain, Forres, Salvage Coll., England (*Doubleday*), Leech Coll.; France, Sand Coll.; Denmark, Leech Coll.; Germany,

Zeller, Frey, and Leech Colls.; Austria; Hungary, Leech Coll.; Switzerland; N. Italy; Algeria; Russia, Livonia, Zeller Coll., Sarepta; Armenia; Asia Minor, Pontus; W. Siberia, Altai. *Exp.* 28–38 millim.

Larva. Meyr. Brit. Lep. p. 66; Barrett, Lep. Brit. vi. p. 14, pl. 234. f. 1.

Pinkish brown; dorsal and subdorsal lines paler, indistinct; subspiracular line pale tinged with greenish; head brown with dark markings. Food-plants: Elm, Oak, *Salix*, &c. 5–6.

2663. Conistra ardescens. (Plate CVI. fig. 17.)

Dasycampa ardescens, Butl. A. M. N. H. (5) iv. p. 364 (1879).

Head and thorax bright purplish rufous to ochreous rufous or red-brown slightly mixed with grey; antennæ whitish at base; abdomen pale purplish or ochreous rufous slightly irrorated with fuscous. Fore wing bright purplish or ochreous rufous or red-brown, the veins with a few white scales; subbasal line indistinctly double filled in with whitish scales, slightly waved, from costa to submedian fold; antemedial line rather indistinct, double filled in with greyish scales, oblique, angled outwards below costa then waved; orbicular and reniform slightly defined by rufous, the former elliptical, the latter narrow, constricted at middle, its lower part filled in with black; a dark medial line oblique from costa to lower angle of cell, then incurved; postmedial line double filled in with greyish, bent outwards below costa, then minutely dentate, incurved at discal fold and below vein 4, some pale points beyond it on costa; subterminal line indistinct, pale, defined on inner side by small rufous spots, slightly angled outwards at vein 7 and excurved at middle; a terminal series of slight dark points; cilia usually with faint pale waved line at base. Hind wing fuscous brown with a rufous tinge; cilia rufous; the underside greyish suffused with rufous especially on costal area and irrorated with brown, a black discoidal spot, sinuous postmedial line and slight waved terminal line.

Ab. 1. Fore wing much darker red-brown, the subterminal line and some suffusion before it reddish ochreous; orbicular and reniform with pale centres; hind wing darker.

Hab. Japan, Yokohama (*Pryer*), 7 ♂, 4 ♀, type. *Exp.* 42 millim.

2664. Conistra ligula.

Noctua ligula, Esp. Schmett. iv. pl. 166. f. 3 (1794); Cappel Tijd. v. Ent. xlii. p. 39. pl. 2. f. 6; Staud Cat. Lep. pal. p. 209.

Noctua subnigra, Haw. Lep. Brit. p. 234 (1809); Steph. Ill. Brit. Ent., Haust. ii. p. 162; Curt. Brit. Ent. vi. pl. 268.

Noctua cruda, Hübn. Eur. Schmett., Noct. f. 172 (1827).

Noctua polita, Hübn. Eur. Schmett., Noct. f. 178 (1827); Dup. Lép. Fr. vi. p. 124, pl. 81. f. 1.

Cerastis dolosa, Dup. Lép. Fr., Suppl. iii. p. 301, pl. 28. f. 1 (nec Hubn.)

Cerastis brigensis, Boisd. Gen. et Ind. Meth. p. 148 (1840); Herr.-Schäff. Eur. Schmett., Noct. f. 459.

Dasycampa staudingeri, Grasl. Ann. Soc. Ent. Fr. 1863, p. 318–9 (nec p. 314, pl. 8. ff. 4–5).

Cerastis subspadicea, Staud. Cat. Lep. Eur. p. 119 (1871).
Orrhodia conspadicea, Fuchs, Stett. ent. Zeit. xlii. p. 130 (1901).
Orrhodia glabroides, Fuchs, Stett. ent. Zeit. xlii. p. 131 (1901).

Head and thorax deep rufous; tibiæ with the spurs ringed black and white; abdomen grey-brown tinged with deep rufous towards extremity and on ventral surface. Fore wing deep purplish red-brown striated with grey; subbasal line indistinctly double filled in with grey, waved, from costa to submedian fold; antemedial line double filled in with grey, waved, oblique; orbicular and reniform irrorated with grey and defined by rufous, the former oblique elliptical, the latter constricted at middle, its lower part filled in with fuscous; an indistinct rufous medial line oblique from costa to lower angle of cell, then inarved; postmedial line double filled in with grey, slightly bent outwards below costa, then minutely waved, incurved at discal fold and below vein 4, some grey points beyond it on costa; terminal area suffused with grey, the subterminal line represented by a series of red-brown points. Hind wing ochreous grey nearly uniformly suffused with fuscous brown; cilia pale ochreous at base; the underside greyish suffused and irrorated with brown, the costal area suffused with rufous, a slight discoidal spot, sinuous postmedial line, and faint diffused subterminal band.

Ab. 1. *subspadicea*. Fore wing rufous or brown, the grey markings slight.

Ab. 2. *polita*. Head, thorax, and fore wing greyish fuscous, the last with the markings slight; abdomen and hind wing paler fuscous.

Ab. 3. *turtur*, Bang-Haas, ined. Similar, but fore wing with the grey markings distinct and the veins streaked with grey.

Hab. Britain (*Doubleday*), Leech Coll; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland; Spain; ? Sicily; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus; W. Turkestan, Ala Tau; E. Siberia, Ussuri. *Exp.* 30–38 millim.

Larva. Meyr. Brit. Lep. p. 65; Barrett. Lep. Brit. vi. p. 17, pl. 234. f. 2.

Yellowish brown; dorsal line pale, indistinct; spiracular line pale pinkish ochreous, dark-edged above; head reddish brown. Food-plants: *Lonicera*, Hawthorn, &c. 5–6.

2665. Conistra albipuncta. (Plate CVII. fig. 30.)

Cerastis albipuncta, Leech, P. Z. S. 1889, p. 514, pl. li. f. 10.

♂. Head and thorax bright rufous; sides of frons tinged with fuscous; abdomen rufous irrorated with fuscous. Fore wing bright rufous with slight dark irroration; traces of a double waved subbasal line from costa to submedian fold; a very indistinct double, minutely waved antemedial line and single medial line; orbicular absent; reniform hardly traceable, very narrow, with prominent white spot defined by black scales at lower angle of cell; postmedial line very indistinct, double, bent outwards below costa, then minutely waved, excurved to vein 4, then incurved; sub-

terminal line very indistinct, pale, defined on inner side by faint dark points, slightly angled outwards at vein 7 and incurved below vein 3: a terminal series of slight dark points. Hind wing fuscous brown, the cilia ochreous; the underside ochreous slightly irrorated with brown, a discoidal striga, sinuous postmedial line and fine waved terminal line.

Hab. Japan, Yokohama (*Pryer*), 1 ♂ type. *Exp.* 44 millim.

2666. Conistra torrida.

Cerastis torrida, Led. Wien. Ent. Mon. 1857, p. 81; Herr.-Schäff. Neue Schmett. ff. 119–120; Rebel, Ann. Hofmus. Wien, xviii. p. 228, pl. iii. f. 6; Staud. Cat. Lep. pal. p. 210.

♀. Head and thorax dark purplish red-brown slightly mixed with ochreous; sides of palpi and frons blackish; abdomen pale, suffused and irrorated with red-brown, the ventral surface paler with dark sublateral stripes. Fore wing purplish red-brown, with slight white irroration on costal area and vein 1; subbasal line represented by a slight oblique striga from costa and patch of black and white scales below cell; antemedial line indistinctly double, oblique, angled outwards below costa, then excurved in interspaces and angled inwards on the veins to black and white points; orbicular defined by black except above, oblique oblong; reniform defined by black on inner side and above, its lower part tinged with fuscous with some white on it; an indistinct irregular medial line, oblique from costa to lower angle of cell; postmedial line rather indistinctly double, strongly bent outwards below costa, then dentate and produced to black and white points on the veins, incurved below vein 4, some white points beyond it on costa; subterminal line represented by a series of slight ochreous and black somewhat dentate marks, slightly angled outwards at vein 7 and excurved at middle, incurved in submedian interspace and defined by fuscous on inner side; a terminal series of black points; cilia with series of slight blackish lunules. Hind wing pale suffused and irrorated with dark brown, the termen slightly paler; a fine dark terminal line; cilia pale purplish; the underside whitish slightly tinged with purple and strongly irrorated with brown, a blackish discoidal spot and curved postmedial line.

Hab. S.E. France; Switzerland, Valais; C. Italy, Aquila; Sicily, Frey Coll.; Carniola; Bulgaria. *Exp.* 36 millim.

Larva. Wullsch. Mitth. Schweiz. Ent. Ges. x. p. 289 (1900).

Brownish red, the ventral surface yellowish; the lines yellowish white. Food-plants: *Prunus spinosa* and *Cornus mus.* 4.

2667. Conistra rubiginea.

Noctua rubiginea, Schiff. Wien. Verz. p. 86 (1776); Fabr. Mant. Ins. ii. p. 142 (1787); Hübn. Eur. Schmett., Noct. f. 183; Dup. Lép. Fr. vii. p. 137, pl. 109. f. 6; Frr. Neue Beitr. i. pl. 45; Steph. Ill. Brit. Ent., Haust. ii. p. 161; Staud. Cat. Lep. pal. p. 210.

Noctua tigerina, Esp. Schmett. iv. pl. 123. f. 4 (1788).

Noctua pulverea, Hübn. Eur. Schmett., Noct. f. 169 (1827).
Noctua neurodes, Hübn. Eur. Schmett., Noct. f. 568 (1827).
Cerastis rubigo, Rmbr. Ann. Soc. Ent. Fr. 1871, p. 317.
Dasycampa unicolor, Tutt. Brit. Noct. iii. p. 7 (1892).

Head and thorax yellow tinged with fulvous; palpi and frons at sides blackish; antennæ brown; tegulæ with slight dark medial line; tibiæ and tarsi banded with black; abdomen golden brown, the anal tuft yellow. Fore wing yellow more or less suffused with fulvous; a black point at base; subbasal line represented by double black striæ from costa and cell, with black point beyond them in cell; antemedial line double, marked with small black spots, oblique, waved, angled inwards on median nervure and vein 1 to black and white points; orbicular and reniform yellow very indistinctly defined by rufous, the former round with black point in centre, the latter narrow, constricted at middle, its lower part filled in with black with white points before and beyond it; a waved rufous medial line with black points on it, excurved from below costa to below cell; postmedial line double, marked with small black spots; bent outwards below costa, then dentate and produced to black and white points on the veins, incurved below vein 4; subterminal line defined on inner side by a series of black points except towards costa and by slight blackish suffusion on outer, somewhat angled outwards at vein 7 and excurved at middle; the veins of terminal area slightly streaked with black and irrorated with white except towards apex; a terminal series of small black spots; cilia with a series of black lunules. Hind wing uniform dark brown with a rufous tinge; cilia pale rufous, sometimes with a brown line through them; the underside pale rufous, the inner half tinged with greyish, a dark discoidal lunule, curved postmedial line and indistinct diffused subterminal band.

Ab. 1. *modesta*, Bang-Haas, ined. Thorax and fore wing suffused with dark red-brown leaving the basal area and annuli of stigmata yellow.

Ab. 2. *completa*, Bang-Haas, ined. Thorax and fore wing entirely suffused with dark red-brown.

Ab. 3. *unicolor*. Head, thorax, abdomen, and fore wing pale brick-red, the last without markings except some black points below base of cell, in orbicular, on subterminal line and termen, and the black and white spot at lower angle of cell; hind wing reddish ochreous suffused with dark brown.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller and Leech Colls.; Austria, Zeller, Frey, and Leech Colls.; Hungary, D'Emmick Coll.; Switzerland, Frey Coll.; Corsica; Italy; Armenia; Asia Minor, Pontus. *Exp.* 32–40 millim.

Larva. Meyr. Brit. Lep. p. 65; Barrett, Lep. Brit. vi. p. 6, pl. 233. f. 2.

Purplish brown clothed with golden brown hairs; dorsal, subdorsal, and spiracular lines indistinctly paler surrounded by blackish freckles; a dorsal series of blackish spots. Food-plants: *Taraxacum*, *Rumex*, Apple, &c. 5–6.

2668. Conistra staudingeri.

Dasycampa staudingeri, Grasl. Ann. Soc. Ent. Fr. 1863, p. 314, pl. 8. ff. 4–5, Rmbr. Cat. Lep. S. And. pl. 18. f. 7; Staud. Cat. Lep. pal. p. 210.
Orrhodia scortina, Staud. Cat. Lep. pal. p. 209 (1901).
Orrhodia uniformis, Staud. Cat. Lep. pal. p. 209 (1901).
Orrhodia livina, Staud. Cat. Lep. pal. p. 209 (1901).
Orrhodia graslini, Staud. Cat. Lep. pal. p. 210 (1901).

Head and tegulæ fulvous yellow, the latter with slight dark medial line and sometimes brown tips; sides of palpi and frons black; thorax brown; pectus and legs yellow, the tibiæ and tarsi marked with fuscous; abdomen ochreous white irrorated with black, the anal tuft yellow. Fore wing grey-white with an ochreous tinge on basal inner area and sometimes on medial area; subbasal line double, waved, from costa to submedian fold, a black point beyond it in cell; antemedial line double, waved, oblique, angled inwards and with black points before it on median nervure and vein 1; orbicular and reniform more or less indistinctly defined by brown, the former round with fuscous spot in centre, the latter narrow, constricted at middle, its lower part filled in with fuscous; a brown medial line oblique from costa to lower angle of cell, then slightly waved; postmedial line indistinct, double, bent outwards below costa, then dentate and produced to a double series of black points on the veins, slightly incurved at discal fold and strongly below vein 4; subterminal line hardly traceable, defined on inner side by slight dark suffusion on costa, then by a series of small dark spots, somewhat angled outwards at vein 7 and excurved at middle; a terminal series of small black spots; cilia ochreous with series of fuscous lunules. Hind wing grey uniformly suffused with fuscous brown; cilia ochreous yellow; the underside whitish irrorated with fuscous and slightly tinged with purplish pink, a dark discoidal lunule and sinuous postmedial line.

Ab. 1. *graslini*. Fore wing paler tinged with brown or chestnut and marked with whitish or yellowish.

Ab. 2. *scortina*. Ground-colour of thorax and fore wing brownish ochreous.

Ab. 3. *uniformis*. Similar but fore wing with the markings almost obsolete.

Ab. 4. *livina*. Head dark rufous; thorax and fore wing grey almost wholly suffused with deep fuscous; hind wing with the cilia brown.

Hab. S. France, 3 ♂, 3 ♀, Digne, E. Pyrenees; Switzerland, Valais; Spain, Andalusia, Granada. *Exp.* 34 millim.

Larva. Lucas, Ann. Soc. Ent. Fr. lxxii. p. 403, pl. v. ff. 3–4 (1903).

Red-brown, dorsally somewhat darker, with golden yellow hair; dorsal, subdorsal, and substigmatal lines grey; stigmata black; rectangular black subdorsal patches on each somite except the 1st; head brown with a black V-shaped mark. Food-plant, *Taraxacum*.

2669. Conistra daubei.

Orthosia daubei, Dup. Lép. Fr., Suppl. iii. p. 331, pl. 30. f. 5 (1838); Staud. Cat. Lep. pal. p. 209.
Cerastis buxi, Boisd. Gen. et Ind. Meth. p. 147 (1840); Herr.-Schäff. Eur. Schmett., Noct. ff. 92–93; Mill. Icones, ii. pl. 52. ff. 5–8.

Head and thorax whitish tinged with pale rufous; frons blackish at sides; abdomen ochreous white irrorated with fuscous, the ventral surface with slight blackish sublateral spots on medial segments. Fore wing whitish more or less strongly tinged with pale rufous and sparsely irrorated with black; subbasal line represented by a slight striga from costa with black point beyond it in cell; antemedial line very indistinctly double, interrupted, oblique, waved; orbicular and reniform sometimes faintly defined by whitish, the former round, the latter rarely with some black in lower and upper outer side of centre; a more or less distinct dark brown medial line, oblique from costa to lower angle of cell; postmedial line with black point at costa, then indistinct or almost obsolete, bent outwards below costa, then minutely dentate, excurved to vein 4, then incurved; subterminal line indistinct, pale, almost always defined on inner side by small black spots, somewhat angled outwards at vein 7 and excurved at middle; a series of small black spots just before termen. Hind wing whitish suffused with fuscous brown; traces of a discoidal lunule, postmedial line and diffused subterminal band: the underside white, the costal area tinged with rufous, a large black discoidal lunule and curved postmedial series of dark points on the veins.

Hab. S. France, Montpellier, Zeller and Leech Colls. *Exp.* 34 millim.

Larva. Kirby, Butt. & Moths Eur. p. 190; Hffm. Raup. p. 119, pl. 32. f. 8. Dark green with broad lateral white stripes; head yellow. Food-plant, *Buxus*.

2670. Conistra inulta. (Plate CVI. fig. 18.)

Orthosia inulta, Grote, 6th Rep. Peab. Ac. Sci. p. 30 (1874); id. Bull. Buff. Soc. Nat. Sci. ii. p. 125, pl. 1. f. 9; Smith, Cat. Noct. N. Am. p. 221.

♂. Head and thorax bright rufous; sides of frons blackish; antennæ white at base; pectus grey-black at sides; tarsi fuscous irrorated with white; abdomen brown, the lateral fringes, anal tuft and ventral surface bright rufous. Fore wing pale red-brown suffused with purplish grey and with slight dark irroration, the costal edge bright rufous; subbasal line dark purplish fuscous, curved, from costa to submedian fold; antemedial line dark purplish fuscous, obliquely curved; claviform absent; orbicular and reniform very large, defined by fine rufous lines, the former oblique elliptical, sometimes confluent with the latter which is slightly constricted at middle; postmedial line dark purplish fuscous, excurved from costa to vein 4, then oblique, the veins beyond it with fine dark streaks; subterminal line rufous, angled outwards at vein 7 and incurved below vein 2; a fine waved brown terminal line; cilia pale rufous irrorated with brown at tips. Hind wing dark reddish brown, the cilia pale rufous, dark brown at tips; the underside pale tinged with

flesh-red, strongly on costal area and with slight dark irroration, a dark discoidal lunule and sinuous postmedial line.

♀. Frons whitish; thorax purplish grey mixed with brown; abdomen dorsally whitish irrorated with brown. Hind wing with the underside more evenly tinged with red and irrorated with brown.

Hab. Canada; U.S.A., 2 ♂, 1 ♀ type, South to Virginia and West to Illinois, Iowa. *Exp.* 44–50 millim.

Larva. Dyar, Proc. Ent. Soc. Wash. iv. p. 324 (1899).

Head bilobed, broader than high, shining light brown, with dark brown curved vertical band and distinct reticulations. Body sordid brown, mottled, the skin thin, markings nearly obsolete; dorsal line narrow; stigmatal line broad, whitish; cervical shield polished, brown, with light central line and a broad pale spot on each edge; anal plate brown, light on the sides; spiracles black. Food-plant, *Viburnum*.—H. G. D.

2671. Conistra viatica. (Plate CVI. fig. 19.)

Orthosia viatica, Grote, 6th Rep. Peab. Ac. Sci. p. 29 (1874); Smith, Cat. Noct. N. Am. p. 221.

Head and thorax bright rufous, a few of the scales tipped with white, the vertex of thorax browner; sides of frons blackish; antennæ white towards base; pectus grey-black at sides; abdomen bright rufous, greyish at base and with slight sublateral dark spots on terminal segments, of female whitish above irrorated with brown. Fore wing bright purple-brown slightly irrorated with white, the costal edge rufous; subbasal line indistinct, dark, from costa to submedian fold; antemedial line indistinct, dark, oblique, slightly and irregularly waved, or almost obsolete; claviform absent; orbicular and reniform large with fine white annuli, the former oblique elliptical, the latter rather constricted at middle; postmedial line blackish with slight fuscous suffusion on its outer edge, strongly and evenly crenulate, very slightly curved; subterminal line indistinct, grey defined on inner side by a slight rufous line, slightly angled outwards at vein 7, then minutely waved; a fine waved brown terminal line; cilia pale purplish at base, dark brown at tips. Hind wing pale evenly suffused with brown and slightly tinged with pinkish or ochreous; a fine waved brown terminal line; cilia pale pinkish or ochreous; the underside white tinged with pink, strongly on costal area, a small discoidal spot and rather diffused curved postmedial line.

Hab. U.S.A. 1 ♂, 1 ♀ type, Massachusetts, New York, Alabama, Texas, Middle and Southern States. *Exp.* 58 millim.

Larva. Head bilobed, broader than high, shining brown, with dark brown curved vertical band and distinct reticulations. Body sordid greenish, mottled in brown and blackish with broad diffuse tessellated shadings; dorsal line whitish, narrow; substigmatal line lost in the subventral colour but its upper edge strongly marked by a waved blackish shade, covering the spiracles and arched upward in the interspaces; cervical shield dark brown, with central line and a broad pale spot on each edge; spiracles black. Food-plants: Oak, &c.—H. G. D.

2672. Conistra signata. (Plate CVI. fig. 20.)

Orthosia signata, French, Can. Ent. xi. p. 76 (1879); Smith, Cat. Noct. N. Am. p. 221.

♂. Head and thorax purplish grey more or less strongly tinged with rufous, frons with strong lateral black bars; antennæ white at base; tegulæ with grey tips with fine brown line before them; prothorax with pair of black points; abdomen pale rufous irrorated with black and with sublateral series of small black spots on last four segments. Fore wing purplish grey more or less strongly tinged with rufous and slightly irrorated with black; subbasal line represented by slight black striæ from costa and cell; antemedial line slight, black defined by greyish on inner side, interrupted, slightly angled outwards below costa, then minutely waved; orbicular and reniform with slight pale annuli defined by rufous, the former oblique elliptical, the latter constricted below and with black spot in lower extremity; a medial shade oblique from costa to lower angle of cell, then incurved; postmedial line slight, black defined by greyish on outer side, bent outwards below costa, then minutely dentate and produced to black points on the veins, excurved to vein 4, then incurved; subterminal line pale defined by brown suffusion on inner side, angled outwards at veins 7, 6 and excurved at middle; a series of slight black points just before termen; cilia with a fine pale line at base. Hind wing pale tinged with pink and irrorated and suffused with fuscous brown, an indistinct diffused dark subterminal band, a fine waved dark terminal line; cilia pale pinkish; the underside grey suffused with rufous especially on costal area and irrorated with fuscous, a black discoidal spot and curved postmedial line.

Hab. U.S.A., Middle and Central States, 2 ♂, New York, Illinois, Distr. of Columbia. *Exp.* 42–44 millim.

2673. Conistra tristigmata. (Plate CVI. fig. 21.)

Scopelosoma tristigmata, Grote, Can. Ent. ix. p. 156 (1877); Smith, Cat. Noct. N. Am. p. 225.

Head and thorax bright rufous; antennæ with the shaft white at base; fore tarsi slightly ringed with white; abdomen grey-brown, the lateral fringes and anal tuft rufous. Fore wing rufous more or less tinged with greyish and irrorated with black; subbasal line indistinct, curved, from costa to submedian fold, antemedial line double, the inner line very indistinct, slightly angled outwards below costa, inwardly oblique and straight to vein 1, then excurved; claviform minute, narrow, defined by brown; orbicular small, round, defined by brown, sometimes touching the antemedial line; reniform pale rufous or greyish defined by brown, with brown line on discocellulars, its lower part filled in with black with white point on its outer edge; medial line slightly waved, oblique below the cell; postmedial line double at costa, then slightly sinuous and produced to short streaks on the veins, slightly angled outwards at

vein 4 and incurved in submedian interspace; subterminal line defined on each side by brown, waved, somewhat angled outwards at vein 7 and excurved at middle, the area beyond it rather darker with an oblique blackish striga from apex; a fine waved brown terminal line. Hind wing pale ochreous suffused and irrorated with fuscous brown, the veins and a fine waved terminal line darker; cilia pale ochreous; the underside pale ochreous tinged with rufous and irrorated with fuscous, a dark discoidal lunule and diffused sinuous postmedial line.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 1 ♀; U.S.A., N.E. States, Massachusetts, Newtonville, (*Thaxter*), 2 ♂ type. *Exp.* 38 millim.

Larva. Resembles that of *C. morrisoni* but richer in colour, the dorsal and subdorsal lines more indistinct, the substigmatal line broader posteriorly and orange-yellow tinted.—H. G. D.

2674. Conistra valceri. (Plate CVI. fig. 22.)

Dichagramma walkeri, Grote, Proc. Ent. Soc. Phil. ii. p. 439, pl. 9. f. 5 (1864); Smith, Cat. Noct. N. Am. p. 225.

Head and thorax bright rufous to purplish brown; antennæ with the shaft white at base; abdomen pale purplish rufous irrorated with fuscous, the lateral fringes, anal tuft, and ventral surface more rufous. Fore wing bright rufous slightly irrorated with fuscous, sometimes tinged with pale purplish grey and more thickly irrorated; the antemedial line defined by greyish on inner side, erect, slightly incurved and sinuous; claviform and orbicular absent: reniform a round white spot on a blackish lunule, usually with white points above and below it, the white marks sometimes obsolete; a dark medial line oblique from costa to lower angle of cell, then incurved; postmedial line blackish, slightly bent outwards below costa, then minutely dentate, incurved below vein 4; subterminal line indistinct, pale slightly defined by red-brown on inner side, minutely waved and slightly angled outwards at veins 7, 6, 4, 3, the veins beyond it with slight dark streaks; a waved dark terminal line; cilia with slight ochreous line at base. Hind wing greyish uniformly suffused with fuscous brown; a fine waved terminal line; cilia pale ochreous; the underside greyish or ochreous tinged with rufous and irrorated with fuscous, a small discoidal lunule and sinuous postmedial line.

Hab. Canada; U.S.A., Maine, New York, 1 ♀, Illinois, Quincy (*Poling*), 1 ♂, 1 ♀, Iowa, Texas, Colorado, Glenwood Springs, 1 ♂. *Exp.* 40 millim.

Larva. Resembles that of *C. morrisoni* but darker and more richly coloured. Velvety black, dorsal and subdorsal lines indistinct; substigmatal line clear white, somewhat obliterated at the ends; cervical shield with subdorsal yellow line; head broadly edged posteriorly with light brown.—H. G. D.

2675. Conistra sidus. (Plate CVI. fig. 23.)

Scopelosoma sidus, Guen. Noct. i. p. 386 (1852); Smith, Cat. Noct. N. Am. p. 226.

Dichagramma vinulenta, Grote, Proc. Ent. Soc. Phil. ii. p. 440, pl. 9. f. 6 (1864).

Head and thorax grey more or less tinged with rufous and irrorated with brown; antennæ with the shaft white at base; abdomen greyish tinged with rufous and with diffused fuscous segmental bands, the lateral fringes and anal tuft rufous. Fore wing greyish more or less suffused with rufous and thickly irrorated with fuscous, the veins with slight dark streaks; subbasal line represented by a slight striga from costa; antemedial line indistinct, dark, almost straight and erect; claviform and orbicular absent; reniform represented by a round white or fulvous spot, usually with white points above and below it, the latter placed on a fuscous mark at lower angle of cell; an indistinct dark medial line, oblique from costa to lower angle of cell, then incurved; postmedial line dark, minutely dentate, somewhat oblique from costa to vein 4 where it is angled outwards, then slightly incurved; subterminal line indistinct, pale, slightly defined by brown on inner side, minutely dentate and slightly angled outwards at vein 7 and excurved at middle; a fine waved terminal line; cilia with a slight brown line through them. Hind wing fuscous brown, the cilia ochreous white tinged with rufous; the underside ochreous grey irrorated with fuscous, the costal area tinged with rufous, a discoidal lunule and sinuous postmedial line.

Ab. 1. *vinulenta*. Head, thorax, and fore wing bright chestnut-red.

Hab. Canada, Ontario, London (*Reed*), 1 ♀; U.S.A., E. States, 1 ♂, 5 ♀, New York, Texas. *Exp.* 40 millim.

Larva. Head dark brown in front, vertex and sides pale luteous. Body with joint 12 enlarged, low, rounded; dark red-brown, dorsal and subdorsal lines pale, indistinct; substigmatal line narrow, diffuse, pale yellow; tubercles pale; cervical shield dark brown cut by bright subdorsal lines; feet brown.—H. G. D.

*2676. Conistra colorado. (Plate CVI. fig. 24.)

Scopelosoma colorado, Smith, J. N.Y. Ent. Soc. xi. p. 21 (1903).

♂. Head and thorax reddish clay-colour to rusty reddish; abdomen fuscous with the anal tuft rufous. Fore wing reddish clay-colour to rusty reddish with slight dark irroration, the markings indistinct; subbasal line defined by pale colour on outer side from costa to submedian fold, or obsolete; antemedial line slightly defined by greyish on inner side, slightly oblique, nearly straight; claviform and orbicular absent; reniform rather narrow, tinged with reddish on outer side and with slight dark point in lower part, with or without white points at extremities; medial shade oblique and hardly traceable from costa to lower angle of cell, then rather more

distinct; postmedial line dark defined by grey on outer side, crenulate, slightly excurved; subterminal line very indistinct, pale slightly defined by fuscous on inner side and with the area beyond it somewhat darker; a fine dark terminal line. Hind wing fuscous, slightly paler at base; cilia ochreous or reddish; the underside pale reddish with darker irroration, a discoidal spot and postmedial line.

Hab. U.S.A., Colorado, Glenwood Springs. *Exp.* 35–40 millim. This species is unknown to me, figured from a drawing from type in Coll. J. B. Smith.

2677. **Conistra morrisoni.** (Plate CVI. fig. 25.)

Scopelosoma morrisoni, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 70 (1874); Smith, Cat. Noct. N. Am. p. 226.

Head and thorax greyish tinged with rufous and irrorated with brown; antennæ whitish at base; abdomen greyish more or less tinged with rufous, dorsal fuscous segmental bands, the lateral fringes and anal tuft rufous, the ventral surface irrorated with fuscous. Fore wing pale grey-brown tinged with rufous and irrorated with fuscous; subbasal line indistinct, greyish, curved, from costa to submedian fold; antemedial line defined by whitish on inner side, almost straight and erect; claviform and orbicular absent; reniform a narrow whitish lunule with fine dark line in centre and black spot at lower extremity; medial line indistinct, oblique from costa to median nervure; postmedial line defined by whitish on outer side, oblique below vein 4; subterminal line indistinct, pale, slightly defined by brown on inner side, minutely dentate, somewhat angled outwards at vein 7 and excurved at middle; a slight waved terminal line; cilia with a fine pale line at base. Hind wing fuscous brown; the cilia whitish tinged with rufous and with slight brown line through them; the underside whitish tinged with purplish pink and irrorated with fuscous, a discoidal lunule and sinuous postmedial line.

Ab. 1. Head, thorax, abdomen, and fore wing chestnut-red; hind wing with the cilia red.

Hab. Canada (*Norman*), 1 ♂; U.S.A., Massachusetts, New York, 3 ♂, 1 ♀ type. *Exp.* 44 millim.

Larva. Dull blackish, dorsal and subdorsal lines whitish, rather distinct; substigmatal line white; cervical shield cut by a yellowish subdorsal line.—H. G. D.

2678. **Conistra devia.** (Plate CVI. fig. 26.)

Scopelosoma devia, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 209; Smith, Cat. Noct. N. Am. p. 226.

♀. Head and thorax grey-white mixed with brown and slightly tinged with rufous; abdomen grey-white irrorated with brown, the lateral fringes and anal tuft ochreous or rufous. Fore wing grey-white suffused and irrorated with purplish brown, the medial and terminal areas rather browner; subbasal line grey, curved, from costa

to submedian fold; antemedial line whitish, inwardly oblique, almost straight or slightly incurved, arising from middle of costa; claviform and orbicular absent; reniform a narrow lunule with white annulus; postmedial line whitish, slightly bent outwards below costa, excurved to vein 4, then incurved; an oblique whitish line before the subterminal line which is fine, whitish, angled outwards at vein 7 and excurved at middle; a fine dark terminal line. Hind wing greyish suffused with fuscous brown; a fine dark terminal line; cilia ochreous white with slight brown line through them; the underside whitish slightly tinged with purplish and thickly irrorated with brown, a discoidal lunule and diffused postmedial line.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 4 ♀; U.S.A., N.E. States, 2 ♀ type, New York. *Exp.* 34–36 millim.

Larva. Head broad, round, black in front, vertex brown, labium and antennæ white. Body brown, lighter and mottled in dorsal space; dorsal and subdorsal lines whitish, dark brown edged; substigmatal band broad, white, straight, sharply edged, tubercles white; cervical shield cut by a pale yellow subdorsal line; thoracic feet nearly black.—H. G. D.

2679. Conistra indirecta. (Plate CVI. fig. 27.)

Xanthia indirecta, Wlk. x. 468 (1857); Smith, Cat. Noct. N. Am. p. 225.
Scopelosoma græfiana, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 69 (1874).

♂. Head and thorax yellow mixed with fiery red; abdomen yellow dorsally irrorated with red. Fore wing yellow thickly irrorated with red, the veins with slight rufous streaks; subbasal line red, slightly angled outwards in cell, from costa to submedian fold; antemedial line red with some dark scales on it, erect, almost straight; orbicular and reniform defined by red, the former small, round, the latter slightly constricted at middle and somewhat angled inwards on median nervure; medial line oblique, slightly sinuous, forming inner edge of reniform; postmedial line red with some dark scales on it, angled outwards below costa, then oblique, almost straight; subterminal line indistinct, rufous with some darker suffusion before it on costa, slightly angled outwards at veins 7, 6 and excurved at middle; a crénulate dark terminal line. Hind wing pale yellow more or less strongly tinged with red except on costal area; a fine rufous terminal line; cilia yellowish white; the underside yellowish white, with slight rufous discoidal lunule with spot on costa above it, and sinuous postmedial line showing through to upperside.

Hab. Canada; U.S.A., N.E. States to Distr. of Columbia, 3 ♂, type and type *græfiana*. *Exp.* 36–40 millim.

2680. Conistra moffatiana. (Plate CVI. fig. 28.)

Scopelosoma moffatiana, Grote, Bull. U.S. Geol. Geog. Surv. Terr. vi. p. 583 (1882); Smith, Cat. Noct. N. Am. p. 225.
Scopelosoma græfiana, Grote, Ill. Essay, p. 65, pl. 3, f. 38 (nec Grote 1874).

Head and thorax orange almost entirely suffused with fiery red and with slightly darker lines near tips of tegulæ and patagia; pectus with pale yellow hair; abdomen silky ochreous yellow. Fore wing orange-yellow suffused and thickly irrorated with fiery red, the veins with slight dark streaks, the lines rufous with leaden fuscous scales on them; subbasal line obliquely curved, from costa to submedian fold; antemedial line slightly oblique from costa to middle of cell, then erect, almost straight; orbicular and reniform defined by red, the former small, round, with some reddish in centre, the latter constricted at middle and slightly angled inwards at upper and lower extremities with slight fuscous mark in lower part; medial line oblique, slightly sinuous, cutting the upper angle of reniform; postmedial line angled outwards below costa, then oblique, almost straight; antemedial line indistinct, rufous, angled outwards at vein 7 and excurved at middle; a fine waved terminal rufous line. Hind wing bright yellow tinged with red except on costal area; a fine rufous terminal line; the underside yellow with small rufous discoidal spot and spot on costa above it, a sinuous postmedial line showing through to upperside and terminal series of minute lunules.

Hab. Canada, Ontario (*Moffat*), 2 ♂, 2 ♀; U.S.A., N.E. States to Distr. of Columbia, 1 ♀. *Exp.* 40 millim.

Larva. Head whitish. Body with the incisures well marked; white with very faint diffuse yellow transverse rings on the segments. Food-plant, *Hamamelis*.—H. G. D.

2681. Conistra pettiti. (Plate CVI. fig. 29.)

Scopelosoma pettiti, Grote, Can. Ent. vii. p. 188 (1875); Smith, Cat. Noct. N. Am. p. 225.

Head and thorax ochreous suffused with fiery red; abdomen pale ochreous irrorated with brown forming obscure dorsal bands. Fore wing pale yellow suffused and thickly irrorated with fiery red, the veins with slight fuscous irroration; subbasal line slightly defined by yellowish on outer side, angled outwards in cell, then oblique and ending at submedian fold; antemedial line defined by yellowish on inner side, erect, almost straight; orbicular and reniform with red centres and yellowish annuli defined by red, the former small, round, the latter slightly constricted at middle and with fuscous mark in its lower part; medial line rather diffused, oblique, almost straight, forming inner edge of reniform; postmedial line defined by yellowish on outer side, slightly angled outwards below costa, then oblique, almost straight and with short dark streaks beyond it on the veins; subterminal line yellowish, angled outwards at vein 7 and excurved at middle, the veins beyond it with slight dark streaks; a terminal series of small rufous lunules. Hind wing pale yellow with traces of diffused rufous postmedial and subterminal lines and fine rufous terminal line; the underside with small rufous

discoidal spot, sinuous postmedial line, and terminal series of minute lunules.

Hab. Canada, 2 ♂, 3 ♀, type; U.S.A., New York, Iowa. *Exp.* 34 millim.

2682. Conistra ceromatica. (Plate CVI. fig. 30.)

Scopelosoma ceromatica, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 70 (1874); Smith, Cat. Noct. N. Am. p. 225.

Head and thorax deep crimson red; patagia with a slightly darker line near tips; abdomen ochreous tinged with red and irrorated with rufous; pectus with some pale hair. Fore wing deep crimson red suffused with silvery grey except at base, the costal edge white; a slight blackish subbasal mark in cell; antemedial line deep red, erect, almost straight; orbicular and reniform very faintly defined by whitish, the former very small elliptical, the latter constricted at middle and with blackish mark in lower part; medial line indistinct, deep red, slightly oblique, almost straight; postmedial line slightly angled outwards below costa, then oblique, slightly sinuous and with minute dark streaks beyond it on the veins; subterminal line indistinct, whitish, excurved below vein 7 and at middle, with dark streaks beyond it on the veins; a fine waved red terminal line. Hind wing ochreous suffused with red except costal area; indistinct diffused postmedial and subterminal lines; the underside paler, the costal area irrorated with red except towards base, a red discoidal lunule and sinuous postmedial line.

Hab. Canada; U.S.A., Maine, New Hampshire, New York, New Jersey, 1 ♂, 1 ♀ type. *Exp.* 38–40 millim.

Genus GRAMMOSCELIS, nov.

Type, *G. leuconeura*.

Proboscis fully developed; palpi porrect, extending to just beyond frons, the 2nd joint fringed with long hair below; frons with truncate prominence with raised corneous edges; eyes large, rounded; antennæ of male bipectinate with moderate branches decreasing to base and apex; head and thorax clothed chiefly with scales, the pro- and metathorax with spreading crests; pectus clothed with long hair; abdomen with some rough hair at base and lateral fringes of hair but without crests. Fore wing with veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2683. Grammoscelis leuconeura, n. sp.

♂. Head and thorax pale greyish ochreous mixed with red-brown and black; sides of palpi and frons with some black; tegulæ with black medial line; patagia with black bars near base; tarsi with blackish bars; abdomen greyish ochreous suffused with brown. Fore wing greyish ochreous suffused with reddish brown and slightly irrorated with fuscous, the veins whitish; subbasal line represented by double black striæ from costa and blackish streaks in and below

cell; antemedial line double, black filled in with whitish, angled outwards below costa, inwards in submedian fold, then strongly bent outwards to inner margin; claviform large, defined by black; orbicular and reniform moderate with brownish centres and whitish annuli defined by black, the former oblique elliptical, the latter produced at upper extremity; a slight medial brown shade, oblique from costa to lower angle of cell; postmedial line double, black

Fig. 160.—*Grammoscelis leuconeura*, ♂. ½.

filled in with whitish, strongly bent outwards below costa, then oblique and slightly sinuous; subterminal line white defined on inner side by dentate black marks, angled outwards at vein 7, inwards at vein 2, then bent outwards to tornus; a fine waved black terminal line with white line on its inner edge; cilia chequered fuscous and brownish white with blackish line through them. Hind wing pale suffused with brown, the inner area paler, the terminal area darker; cilia brownish at base, whitish at tips; the underside white irrorated with brown, a prominent black discoidal spot, strong brown postmedial line and terminal series of brown striæ.

Hab. C. Colony, Deelfontein (*Sloggett*), 1 ♂ type. *Exp.* 30 millim.

Genus **OMPHALOSCELIS**, nov.

Type, *O. lunosa*.

Proboscis fully developed; palpi obliquely porrect, fringed with long hair in front, the 3rd joint short; frons with semicircular corneous prominence with raised edges and corneous plate below it; eyes large, rounded; antennæ of male minutely serrate and fasciculate; head and thorax clothed with hair only, the vertex of head with large crest, the tegulæ produced to a slight dorsal ridge, the pro- and metathorax without distinct crests; abdomen with some rough hair at base and lateral tufts of hair but without crests. Fore wing with the termen evenly curved, veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2684. **Omphaloscelis lunosa.**

Noctua lunosa, Haw. Lep. Brit. p. 230 (1809); Curt. Brit. Ent. p. 237; Steph. Ill. Brit. Ent., Haust. ii. p. 147; Staud. Cat. Lep. pal. p. 205.
Orthosia subjecta, Dup. Lép. Fr. Suppl. iii. p. 295, pl. 27. f. 3 (1836).
Anchoscelis agrotoides, Guen. Ann. Soc. Ent. Fr. viii. p. 486 (1839), non descr.
Orthosia neurodes, Herr.-Schäff. Eur. Schmett., Noct. ff. 94, 289 (1845).

Head and thorax varying from pale greyish brown to bright rufous or dark purplish red-brown; sides of palpi and frons blackish

or dark brown; hair on pectus dark brown: abdomen ochreous with dark bands or almost wholly suffused with dark brown. Fore wing varying from pale grey-brown to bright rufous or dark purple-brown suffused with grey and irrorated with brown, the veins whitish; subbasal line very indistinct, double, from costa to submedian fold with black point beyond it in cell; antemedial line double, rufous filled in with pale colour or greyish, slightly angled outwards below costa and inwards in cell, then obliquely excurved; orbicular and reniform moderate with dark brown centres and pale annuli slightly defined by brown; a diffused rufous medial line

Fig. 161.—*Omphaloscelis lunosa*, ♂. ½.

oblique from costa to median nervure, then slightly waved; postmedial line double filled in with pale colour or greyish, bent outwards below costa and incurved below vein 4; postmedial area sometimes with the interspaces suffused with dark brown; subterminal line very indistinct, pale, defined on inner side by two dentate black spots below costa, then by a series of small spots or points, slightly angled outwards at vein 7 and excurved at middle; a series of slight points just before termen; cilia intersected with dark brown. Hind wing white more or less irrorated and suffused with fuscous brown, a blackish discoidal lunule and diffused maculate subterminal band, sometimes mostly suffused with fuscous; the underside white irrorated with brown, a large discoidal spot, indistinct curved postmedial line, and diffused subterminal band.

Hab. Britain (*Barrett*), Leech Coll; France, Sand and Frey Colls.; Spain, Castile, Aragon; Algeria. *Exp.* 34–38 millim.

Larva. Meyr. Brit. Lep. p. 58; Barrett, Lep. Brit. v. p. 348, pl. 228. f. 2.

Yellow-brown or green; dorsal and subdorsal lines pale or whitish; spiracular line whitish, brown-edged above; tubercles large, black. Food-plants, Grasses. 10–4.

Genus **AMATHES.**

	Type.
Amathes, Hübn. Verz. p. 222 (1827)	*litura.*
Agrochola, Hübn. Verz. p. 229 (1827)	*pistacina.*
Rusina, Steph. Ill. Brit. Ent., Haust. ii. p. 111 (1829)	*circellaris.*
Anchoscelis, Guen. Ann. Soc. Ent. Fr. viii. p. 485 (1839)	*nitida.*
Dyschorista, Led. Noct. Eur. p. 143 (1857)	*inera.*
Spudæa, Snell. Vlind. Ned. p. 289 (1872)	*ruticilla.*
Heteromorpha, Failla-Ted. Nat. Sicil. x. p. 30 (1890), nec Kirby, Col. 1825	*ragusæ.*

Proboscis fully developed; palpi obliquely porrect, fringed with long hair in front, the 3rd joint short; frons smooth; eyes large, rounded; antennæ of male typically ciliated; head and thorax clothed with hair only; the tegulæ produced to a dorsal ridge, the pro- and metathorax without distinct crests;

abdomen dorsally flattened, with lateral tufts of hair and some rough hair at base but without crests. Fore wing with the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Spudæa*). Antennæ of male strongly serrate and fasciculate.

A. Fore wing with the reniform represented by a V-shaped fuscous patch ..... *vitzenmanni.*
B. Fore wing with the reniform constricted at middle, its lower part filled in with blackish ..... *ruticilla.*

2685. Amathes vitzenmanni. (Plate CVII. fig. 32.)

Orthosia witzenmanni, Stndf. Mitth. viii. p. 233 (1890); Hffm. Gr. Schmett. Eur. ed. ii. pl. 55. ff. 1 *a*, *b*; Staud. Cat. Lep. pal. p. 206.
Orthosia subcastanea, Staud. Cat. Lep. pal. p. 206 (1901).

♂. Head, thorax, and abdomen brownish white; sides of palpi and frons tinged with fuscous; antennæ browner except at base; tarsi fuscous with pale rings; abdomen slightly irrorated with fuscous. Fore wing brownish white with a faint rufous tinge, the costal edge pale rufous; antemedial line represented by some faint fuscous points; reniform V-shaped, fuscous; postmedial line very indistinct, fuscous, bent outwards below costa, then dentate and produced to slight streaks on the veins, oblique below vein 4; subterminal line very indistinct, fuscous, excurved at middle; a series of black points just before termen; cilia whitish. Hind wing grey-white slightly irrorated with fuscous especially on the veins; traces of a curved postmedial line and diffused subterminal band; the underside white, the costal and terminal areas irrorated with fuscous, a black discoidal spot.

♀. Fore wing slightly more tinged with rufous.

Ab. 1. *subcastanea.* Head, thorax, and fore wing rather pale rufous.

Three specimens in Coll. Püngeler have two or three spines on the hind tibiæ; this may be an ancestral character, in which case the species will be better placed in the *Agrotinæ* near *Mythimna cæcimacula.*

Hab. S.E. France, Digne, 2 ♂, 2 ♀. *Exp.* 42–46 millim.

Larva. Lucas, Bull. Soc. Ent. Fr. 1904, p. 232, & Chret. Le Nat. 1904, p. 269

Head reddish; 1st somite with a fine black line; abdominal somites greenish, the extremity of feet reddish; the remainder dull dark green or brownish; stigmatal line yellowish white; dorsal and subdorsal lines indistinct, pale green; warts black. Food-plant, *Salix caprœa.*

2686. Amathes ruticilla.

Noctua ruticilla, Esp. Schmett. iv. pl. 157. f. 1 (1791); Herr.-Schäff. Eur. Schmett., Noct. f. 407; Staud. Cat. Lep pal. p. 205.
Noctua serpylli, Hübn. Eur. Schmett., Noct. ff. 488–9 (1827); Dup. Lép Fr. vi. p. 67, pl. 76. ff. 6–7.

Orthosia illicis, Dup. Lép. Fr., Suppl. iii. p. 303, pl. 28. ff. 2*a*–6 (1836).
Noctua saportæ, Frr. Neue Beitr. iv. pl. 292. f. 4 (1842).

Head and thorax grey-brown; sides of palpi and frons blackish; antennæ blackish, whitish at base; tegulæ with slight medial dark line; tibiæ with some red hair; tarsi with pale rings; abdomen grey-brown dorsally irrorated with fuscous. Fore wing grey-brown with slight dark irroration; subbasal line double, waved, from costa to submedian fold; antemedial line double, waved, the inner line indistinct, with black and white points before it on the veins; orbicular and reniform with pale annuli slightly defined by black, the former rounded, the latter constricted at middle, its lower part filled in with blackish; a rather diffused medial line angled outwards to lower angle of cell; postmedial line double, bent outwards

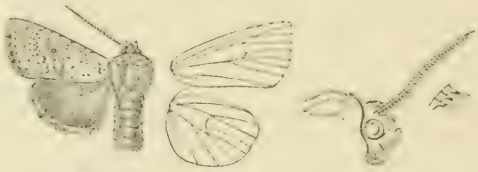


Fig. 162.—*Amathes ruticilla*, ♂. ½.

below costa, then minutely dentate and produced to black and white points on the veins, incurved below vein 4; subterminal line pale defined on inner side by a brownish bar from costa, then by a series of black points on the veins, slightly angled outwards at vein 7 and inwards in submedian fold; a terminal series of black points connected by a slight waved line; cilia brown with slight pale line at base. Hind wing fuscous brown; cilia ochreous grey with a fuscous line through them: the underside grey-white irrorated with fuscous, a black discoidal lunule, strong curved postmedial line and waved terminal line.

Ab. 1. Head, thorax, and fore wing with the ground-colour chestnut-red.

Hab. France, Sand Coll.; Belgium; Holland; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller Coll.; Hungary; Switzerland; Spain; Corsica; Italy; Dalmatia; Asia Minor, Pontus; Syria. *Exp.* 28–34 millim.

Larva. Kirby, Butt. & Moths Eur. p. 181; Hffm. Raup. p. 116.

Brown with dark zigzag markings; head black. Food-plant, Oak, first attacking the buds.

Sect. II.—Antennæ of male minutely serrate with fasciculate cilia.

A. (*Heteromorpha*). Wings of female reduced; hind wing with the apex produced and acute, the termen excised below it.

*2687. Amathes ragusæ.

Heteromorpha ragusæ, Failla-Ted. Nat. Sicil. x. p. 30, pl. 1. ff. 6–7 (1890); Staud. Cat. Lep. pal. p. 207.

♂. Head, thorax, and abdomen yellowish tinged with rufous. Fore wing yellow tinged with rufous; antemedial line double, curved; orbicular hardly traceable; reniform represented by a dark spot at lower angle of cell surrounded by a slight annulus; a dark medial line oblique from costa to median nervure, then inwardly oblique; postmedial line indistinctly double, bent outwards below costa, then dentate, oblique below vein 4: subterminal line defined on each side by a series of reddish lunules. Hind wing yellowish white with a dark terminal line.

♀ with the hind wing darker.

Hab. Sicily. *Exp.* ♂ 34, ♀ 22 millim. This species is unknown to me.

B. (*Agrochola*). Female with the wings fully developed.
- *a*. Fore wing with the antemedial line double.
  - a^1. Fore wing with the antemedial line excurved from subcostal nervure to inner margin ..... *rupicapra*.
  - b^1. Fore wing with the antemedial line nearly straight, oblique ..... *humilis*.
  - c^1. Fore wing with the antemedial line oblique, waved.
    - a^2. Fore wing with the orbicular narrow, oblique elliptical.
      - a^3. Fore wing with the terminal area concolorous. *lychnidis*.
      - b^3. Fore wing with the terminal area paler ..... *scabra*.
    - b^2. Fore wing with the orbicular round with pale annulus.
      - a^3. Fore wing with the terminal area paler ..... *cindermanni*.
      - b^3. Fore wing with the terminal area concolorous.. *lævis*.
- *b*. Fore wing with the antemedial line single.
  - a^1. Hind wing with the costal area dark brown.
    - a^2. Fore wing with the subterminal line indistinct, greyish ..... *hæmatidea*.
    - b^2. Fore wing with the subterminal line ochreous defined by rufous on inner side.
      - a^3. Fore wing grey-brown ..... *lota*.
      - b^3. Fore wing fulvous yellow ..... *macilenta*.
  - b^1. Hind wing with the costal area pale.
    - a^2. Fore wing with the antemedial line oblique, waved.
      - a^3. Frons black at sides ..... *verberata*.
      - b^3. Frons concolorous at sides.
        - a^4. Fore wing ochreous suffused with rufous ... *circellaris*.
        - b^4. Fore wing with the ground-colour fulvous yellow..... *bicolorago*.
    - b^2. Fore wing with the antemedial line oblique from costa to submedian fold, then erect..... *helvola*.

*2688. Amathes rupicapra. (Plate CVI. fig. 31.)

Orthosia rupicapra, Staud. Hor. Ent. Soc. Ross. xiv. p. 391 (1878); id. Cat. Lep. pal. p. 206.

♂. Head, thorax, and abdomen ochreous slightly tinged with rufous; sides of palpi and frons blackish; antennæ blackish except at base; pectus with some whitish hair. Fore wing ochreous slightly tinged with rufous and very faintly irrorated with fuscous; subbasal line represented by very slight double blackish striæ from

costa and cell with a black point beyond them in cell; antemedial line very indistinct, double, minutely waved, interrupted below costa; claviform absent; orbicular and reniform with slight ochreous annuli, their centres tinged with brown, the former very small, oblique elliptical, the latter narrow and with its lower part filled in with black; medial line very indistinct, oblique from costa to lower angle of cell, then inwardly oblique; postmedial line very indistinctly double, bent outwards below costa, then minutely waved, excurved to vein 4, then oblique; subterminal line represented by a brownish bar from costa, then very indistinct, pale with faint dark points on its inner edge; a series of faint dark points just before termen; cilia pale rufous with fine ochreous line at base. Hind wing ochreous tinged with brown, the veins rather darker; a slight discoidal lunule, traces of a postmedial line and diffused subterminal band; the underside whitish irrorated with brown, a slight discoidal lunule and traces of a curved postmedial line.

Hab. Asia Minor, Pontus, Amasia in Coll. Püngeler, Taurus. *Exp.* 38 millim.

2689. Amathes humilis.

Noctua humilis, Schiff. Wien. Verz. p. 76 (1776); Fabr. Mant. Ins. ii. p. 146 (1787); Hübn. Eur. Schmett., Noct. f. 170; Dup. Lép. Fr. vii. p. 274, pl. 117. f. 4; Staud. Cat. Lep. pal. p. 206.

Head and thorax brownish grey irrorated with fuscous; sides of palpi and frons blackish mixed with rufous. Abdomen grey irrorated with fuscous. Fore wing grey-brown irrorated with black, the veins pale, the inner margin rufous; subbasal line indistinctly double, from costa to submedian fold; antemedial line indistinctly double, oblique, slightly sinuous; orbicular and reniform large, defined by whitish, the former oblique elliptical; a rather diffused fuscous medial line incurved below the cell; postmedial line double filled in with grey, bent outwards below costa and incurved below vein 4; subterminal line formed of grey striæ defined on inner side by a blackish bar from costa, then by a series of small fuscous spots; a fine waved black terminal line with series of black points in the interspaces just before termen; cilia tinged with fuscous with fine grey line at base. Hind wing pale grey-brown with darker waved terminal line; cilia whitish: the underside whitish slightly tinged with brown and irrorated with fuscous, a slight discoidal lunule.

Hab. France, Leech Coll.; Belgium; Germany, Zeller Coll.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland. *Exp.* 30–40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 182; Hffm. Raup. p. 117, pl. 31, f. 22.

Green with dorsal and subdorsal lines white; lateral stripe white edged with black above. Food-plants: *Carduus acanthoides*, *Sonchus*, and other low plants. 5–6.

2690. Amathes lychnidis.

Noctua lychnidis, Schiff. Wien. Verz. p. 76 (1776); Fabr. Mant. Ins. ii. p. 146 (1787); Hübn. Eur. Schmett., Noct. f. 464; Dup. Lép. Fr. vi. p. 113, pl. 80. f. 5.
Noctua pistacina, Schiff. Wien. Verz. p. 77 (1776); Fabr. Mant. Ins. ii. p. 175 (1787); Hübn. Eur. Schmett., Noct. f. 131; Steph. Ill. Brit. Ent., Haust. ii. p. 146; Staud. Cat. Lep. pal. p. 206.
Noctua serina, Esp. Schmett. iv. pl. 156. ff. 1, 2 (1791).
Noctua rubetra, Esp. Schmett. iv. pl. 156. ff. 3, 4 (1791).
Noctua canaria, Esp. Schmett. iv. pl. 156. ff. 5, 6 (1791).
Noctua schœnobœna, Esp. Schmett. iv. pl. 157. ff. 2, 3 (1791).
Phalæna lineola, Donov. Brit. Ins. x. pl. 360. f. 2 (1801).
Noctua sphærulatina, Haw. Lep. Brit. p. 230 (1809).
Noctua venosa, Haw. Lep. Brit. p. 232 (1809).
Orthosia cærulescens, Calb. Iris, i. p. 254 (1884).

Head and thorax pale red-brown; sides of palpi and frons blackish; pectus and legs fuscous brown; abdomen brown suffused with fuscous. Fore wing pale red-brown, the inner area irrorated with fuscous; subbasal line represented by double black points below costa and cell and the outer line by a point in cell; antemedial line represented by two black points on costa and an oblique waved line from cell to inner margin; orbicular an oblique black bar; reniform a narrow black lunule; a rather diffused fuscous medial line oblique from costa to lower angle of cell where it is angled and with black point at costa; postmedial line with black point at costa, strongly bent outwards and almost obsolete below costa, then fuscous and minutely waved, slightly incurved at discal fold and incurved below vein 4, with series of slight black points beyond it on the veins; subterminal line represented by an oblique fuscous bar from costa, then by a series of black points in the interspaces; a series of black points just before termen; a fine waved terminal line; cilia fuscous at tips. Hind wing ochreous uniformly suffused with fuscous; some darker lunules on termen; cilia pale ochreous tinged with fuscous at tips; the underside grey-white thickly irrorated with fuscous, a black discoidal spot.

Ab. 1. *canaria*. Darker; fore wing more or less suffused with black.

Ab. 2. *serina*. Fore wing paler and almost unicolorous.

Ab. 3. *rubetra*. Fore wing almost uniform rufous.

Ab. 4. *cærulescens*. Fore wing bluish-grey.

Hab. Britain, Leech Coll.; France, Sand Coll.; Denmark; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller and Leech Colls.; Hungary; Switzerland, Frey Coll.; Spain; Italy; Greece, Leech Coll.; S. Russia, Leech Coll.; Armenia; Asia Minor, Pontus, Lydia; Syria. *Exp.* 36–44 millim.

Larva. Meyr. Brit. Lep. p. 63; Barrett, Lep. Brit. v. p. 341, pl. 227. f. 1. Grey or brown with darker freckles; dorsal line slender, whitish; spiracular line broad, whitish. Food-plants: Grasses, *Carex*, *Ranunculus*, &c. 4–6.

*2691. Amathes scabra. (Plate CVI. fig. 32.)

Orthosia scabra, Staud. Iris, iv. p. 301 (1891); id. Cat. Lep. pal. p. 207.

♂. Head and thorax ochreous white slightly irrorated with rufous; sides of palpi and frons blackish: tarsi with slight whitish rings; abdomen ochreous white with slight dark irroration, the anal tuft tinged with rufous. Fore wing ochreous tinged with rufous and irrorated with a few black scales; a black point at base and two subbasal black points in cell; antemedial line indistinct, double, minutely waved; orbicular small, oblique elliptical, with ochreous annulus and a small black spot in upper part; reniform small, narrow, with slight pale annulus, its upper part irrorated with black, its lower part filled in with black; a slight medial shade, oblique from costa to lower angle of cell, then inwardly oblique; postmedial line rather indistinct, double filled in with ochreous, bent outwards below costa, then minutely dentate, excurved to vein 4, then oblique; subterminal line represented by a series of faint yellowish marks with black points on their inner side, very slightly angled outwards at vein 7; the terminal area rather paler; a series of black points just before termen and a slight waved black terminal line. Hind wing white slightly suffused with brown, a slight discoidal spot, traces of a postmedial line and diffused subterminal band; cilia tinged with ochreous; the underside white irrorated with brown, a black discoidal lunule and traces of a curved postmedial line.

Hab. Palestine, Jerusalem, in Coll. Püngeler. *Exp.* 36 millim.

2692. Amathes cindermanni.

Noctua kindermanni, Fisch. v. Rösl. Abbild. p. 77, pl. 36. ff. 1 *a–c* (1834); Frr. Neue Beitr. pl. 327. ff. 1, 2; Staud. Cat. Lep. pal. p. 207.
Orthosia ballotæ, Dup. Lép. Fr., Suppl. iii. p. 600, pl. 50. f. 1 (1836).
Orthosia consueta, Herr.-Schäff. Eur. Schmett. vi. p. 54, Noct. f. 564 (1845).
Orthosia pauli, Staud. Iris, iv. p. 301 (1891).

Head, thorax, and abdomen grey-white tinged with reddish brown; sides of palpi and frons blackish; antennæ blackish except at base. Fore wing whitish grey slightly tinged with red-brown and irrorated with brown except terminal area; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line brown, double, waved, curved; orbicular and reniform with whitish annuli defined by brown, the former round, the latter with fuscous centre, obscured by the medial shade which is diffused fuscous and oblique from costa to lower angle of cell, then double, waved, brown, incurved; postmedial line brown, double, bent outwards below costa, then minutely dentate and produced to a double series of black points on the veins with whitish points between them, incurved at discal fold and below vein 4; postmedial area browner; subterminal line only defined by the contrast between the postmedial and terminal areas, slightly angled outwards at vein 7 and excurved at middle; a terminal series of brown points;

cilia tinged with rufous. Hind wing pale brown, the cilia whitish; the underside grey-white slightly irrorated with brown, a discoidal spot and indistinct curved postmedial line.

Ab. 1. *pauli*. Fore wing with the ground-colour whiter, more strongly tinged with rufous.

Hab. ? Sicily; Dalmatia; Armenia; Asia Minor, Zeller and Crowley Colls., Pontus, Cilicia, Taurus; Palestine, 1 ♂, 1 ♀. *Exp.* 32–36 millim.

2693. Amathes lævis.

Orthosia lævis, Treit. Schmett. Eur. v. (2) p. 232 (1825); Hübn. Eur. Schmett., Noct. p. 163 (1827): Staud. Cat. Lep. pal. p. 206.

Head and thorax pale grey-brown; sides of palpi and frons blackish; antennæ blackish except at base; abdomen grey slightly tinged with rufous except at base and irrorated with fuscous. Fore wing pale grey-brown slightly tinged with rufous; subbasal line represented by a black striga from costa and point below the cell; antemedial line minutely waved, incurved in cell, then indistinctly double; orbicular and reniform moderate with whitish annuli slightly defined by brown, the former round, the latter with its lower part filled in with black; a diffused medial line oblique from costa to lower angle of cell where it is angled, then incurved; postmedial line indistinct, double, bent outwards below costa, then minutely waved and produced to a double series of black points on the veins with whitish points between them, excurved to vein 4, then incurved; subterminal line indistinct, pale, slightly defined by rufous on inner side, angled outwards at vein 7, excurved and slightly waved at middle; a terminal series of black points with traces of a waved line between them; cilia with a slight fuscous line through them. Hind wing fuscous brown; cilia ochreous grey with a fuscous line through them; the underside whitish irrorated with fuscous, the costal area slightly tinged with rufous, a discoidal lunule, sinuous postmedial line, and some blackish lunules on termen.

Hab. France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller and Leech Colls.; Hungary, Leech Coll.; Switzerland; N. Italy; S. Russia, Leech Coll.; Asia Minor, Pontus. *Exp.* 30–36 millim.

Larva. Kirby, Eur. Butt. & Moths, p. 182; Hffm. Raup. p. 118.

Pale brown with dorsal yellowish stripe; thoracic shield black with two white lines; head brown. Food-plants: Low plants. 5.

*2694. Amathes hæmatidea.

Noctua hæmatidea, Dup. Lép. Fr. vii. p. 365, pl. 122. f. 5 (1827); Frr. Neue Beitr. pl. 95. f. 4; Herr.-Schäff. Eur. Schmett., Noct. f. 49; Staud. Cat. Lep. pal. p. 206.

♀. Head and thorax deep chestnut-red; palpi in front and sides of frons blackish; antennæ whitish at base; pectus and legs dark

brown, the tibiæ reddish; abdomen dark brown, the anal tuft ochreous. Fore wing deep glossy chestnut-red, the inner medial area suffused with dark brown, the veins with slight dark streaks; subbasal line represented by a faint dark striga from costa; antemedial line very indistinct, single, dark, oblique, somewhat dentate, angled inwards on vein 1 and to inner margin; claviform and orbicular absent; reniform represented by a small faint greyish spot; medial line very indistinct, oblique from costa to median nervure, then inwardly oblique; postmedial line very indistinct, dark, bent outwards below costa, then dentate, oblique below vein 4, the costa beyond it blackish with pale points; the postmedial line very slightly darker; subterminal line greyish slightly defined on inner side by a punctiform brown line, very slightly angled outwards at vein 7 and excurved at middle; a slightly waved brown terminal line; cilia rufous with a slight pale line at base. Hind wing fuscous brown with a slight reddish tinge, the veins slightly darker; cilia pale rufous; the underside greyish tinged with red and irrorated with brown, a slight dark discoidal lunule and sinuous postmedial line.

Hab. S. France, in Coll. Püngeler; Spain, Andalusia; Italy; Algeria. *Exp.* 34 millim.

2695. Amathes lota.

Noctua lota, Linn. Syst. Nat. ed. x. p. 513 (1758); Clerck, Icones, pl. 8. f. 1 (1759); Esp. Schmett. iii. pl. 67. f. 1; Sepp. Ins. iii. pl. 38; Frr. Beitr. pl. 111; Dup. Lép. Fr., Suppl. iii. p. 298, pl. 27. f. 4; Steph. Ill. Brit. Ent., Haust. ii. p. 147; Staud. Cat. Lep. pal. p. 206.
Noctua hippophaes, Rossi, Mant. ii. p. 281 (1794).
Noctua munda, Hübn. Eur. Schmett., Noct. f. 167 (1827).

Head and thorax grey-brown; sides of palpi and frons black; antennæ whitish at base; tarsi fuscous with pale rings; abdomen grey tinged with rufous. Fore wing grey-brown; subbasal line represented by slight black points below costa and cell; antemedial

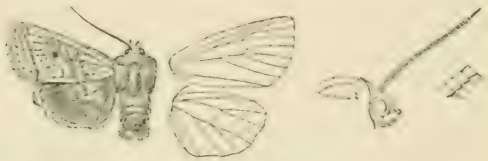


Fig. 163.—*Amathes lota*, ♂. ½.

line indistinct, oblique, waved, with double series of slight black points before it on the veins; orbicular and reniform with grey annuli, the former oblique elliptical, the latter oblique oblong, its lower part filled in with black; a fuscous medial shade; postmedial line indistinct, bent outwards below costa then minutely waved, incurved below vein 4, with double series of slight black points beyond it with whitish points between them on the veins and some

ochreous points on costa; subterminal line ochreous defined by rufous on inner side, slightly angled outwards at vein 7, then oblique; a terminal series of slight brown lunules. Hind wing fuscous brown, the cilia greyish ochreous with a slight fuscous line through them. Underside grey irrorated with brown; fore wing with the cell and area below it suffused with brown, a sinuous dark postmedial line and subterminal line; hind wing with black discoidal spot and curved sinuous postmedial line.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland, Leech Coll.; Spain; N. Italy; Russia, Livonia, Leech Coll.; Armenia; Asia Minor, Pontus; W. Siberia, Altai. *Exp.* 36–40 millim.

Larva. Meyr. Brit. Lep. p. 63; Barrett, Lep. Brit. v. p. 351, pl. 229. f. 1.

Brown sometimes tinged with purple or reddish; dorsal and subdorsal lines white, interrupted, with dark edges; spiracular line broad, ochreous white; tubercular points white. Food-plant, *Salix fragilis*. 5–6.

2696. Amathes macilenta.

Noctua unimaculina, Haw. Prod. Lep. Brit. p. 15 (1802), non descr.
Noctua macilenta, Haw. Lep. Brit. p. 239 (1809); Hübn. Eur. Schmett., Noct. f. 418 (1827); Dup. Lép. Fr. vii. p. 64, pl. 104. f. 5; Frr. Neue Beitr. pl. 251; Steph. Ill. Brit. Ent., Haust. iii. p. 68; Staud. Cat. Lep. pal. p. 206.
Noctua flavilinea, Haw. Lep. Brit. p. 243 (1809); Steph. Ill. Brit. Ent., Haust. ii. p. 148, pl. 19. f. 2.
Orthosia nigrodentata, Fuchs, Jahrb. Nass. Ver. lii. p. 135 (1899).

Head and thorax fulvous; sides of palpi and frons black; antennæ blackish at middle; tarsi blackish at extremities; abdomen fulvous yellow. Fore wing fulvous yellow; subbasal line represented by small black spots below costa and cell; antemedial line indistinct with black points on the costa and veins, oblique from costa to submedian fold, then angled inwards on vein 1; orbicular and reniform with faint pale outlines, the former round, the latter constricted at middle, its lower part filled in with black; a diffused medial line angled outwards to lower angle of cell; postmedial line indistinct, bent outwards below costa, then minutely dentate and produced to black points on the veins, oblique below vein 4; subterminal line fine, red-brown defined on each side by whitish, slightly angled outwards at vein 7, then oblique; a fine waved brown terminal line. Hind wing ochreous almost wholly suffused with fuscous, the medial part of termen and cilia pale rufous; the underside ochreous irrorated with fuscous, a black discoidal spot and diffused sinuous postmedial line showing through to upper side.

Ab. 1. *nigrodentata*. Fore wing with the subbasal, ante- and postmedial lines black and strongly dentate.

Hab. Britain, Leech Coll.; France; Denmark, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; N. Italy; ? Sicily; Scandinavia; Asia Minor, Pontus. *Exp.* 32–36 millim.

Larva. Meyr. Brit. Lep. p. 63; Barrett, Lep. Brit. v. p. 354, pl. 229. f. 2. Ochreous brown with darker freckles; dorsal line whitish, distinct; subdorsal line pale or whitish: spiracular line ochreous white or white, dark-edged above. Food-plants: Beech, Oak, and Hawthorn. 4–6.

2697. Amathes verberata. (Plate CVII. fig. 1.)

Orthosia verberata, Smith, Can. Ent. xxxvi. p. 153 (1904).

Head and thorax greyish ochreous suffused with rufous; palpi rufous; sides of frons black; antennæ blackish, whitish at base; tarsi suffused with fuscous; abdomen greyish dorsally suffused with fuscous, the lateral fringes and ventral surface pale rufous, the latter irrorated with black. Fore wing ochreous irrorated with fuscous and tinged in parts with rufous, the veins with slight dark streaks; subbasal line dark, curved, from costa to submedian fold; antemedial line angled outwards below costa and inwards on median nervure and vein 1, excurved below cell and above inner margin; claviform large, defined above by red; orbicular and reniform defined by red, the former round, the latter with black spot in its lower part; medial shade rufous and fuscous, oblique from costa to lower angle of cell, then incurved; postmedial line dark, bent outwards below costa, then minutely dentate and with series of black points beyond it on the veins, incurved at discal fold and strongly below vein 4; postmedial area suffused with brown except just beyond postmedial line and on costal area; subterminal line ochreous defined by red on inner side, angled outwards at vein 7, excurved at middle and bent inwards at vein 2, the area beyond it suffused with brown; a terminal series of small black lunules; cilia chequered rufous and fuscous with a fine ochreous line at base. Hind wing whitish suffused with fuscous except costal area; the termen and cilia yellow; the underside whitish irrorated with fuscous, the costal area yellowish, a dark discoidal lunule, sinuous postmedial line, and incomplete maculate subterminal band.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 2 ♂; U.S.A., Colorado, Glenwood Springs, 1 ♀. *Exp.* 40 millim.

2698. Amathes circellaris.

Phalæna circellaris, Hüfn. Berl. Mag. iii. p. 404 (1767); Staud. Cat. Lep. pal. p. 206.
Noctua ferruginea, Schiff. Wien. Verz. p. 86 (1776); Esp. Schmett. iii. pl. 47. f. 6 (1785); Hübn. Eur. Schmett., Noct, f. 181; Dup. Lép. Fr. vii. p. 470, pl. 130. f. 2; Frr. Beitr. pl. 123.
Bombyx fuscago, Esp. Schmett. iii. pl. 75. f. 5 (1785).
Noctua undata, View, Verz. Schmett. p. 17, pl. 1. f. 2 (1789).
Noctua undosa, Bork. Eur. Schmett. iv. p. 753 (1792).
Noctua macilenta, Hübn. Eur. Schmett., Noct. ff. 688–9 (1827); Steph. Ill. Brit. Ent., Haust. iii. p. 148.
Orthosia nigridens, Fuchs, Stett. ent. Zeit. 1883, p. 263.

Head and thorax rufous; abdomen ochreous dorsally suffused

with fuscous leaving ochreous segmental bands. Fore wing ochreous suffused with rufous; subbasal line rufous, angled outwards below costa and ending at submedian fold; antemedial line rufous, oblique, waved, angled inwards on median nervure and outwards at submedian fold; orbicular and reniform large, defined by rufous, the former round, the latter with black spot in lower part; a rufous medial line from costa to discal fold; postmedial line rufous, bent outwards below costa, then minutely dentate and produced to slight streaks on the veins, incurved below vein 4; subterminal line rufous, excurved below costa and at middle and incurved in submedian interspace; a waved rufous terminal line. Hind wing ochreous suffused with fuscous except costal area and termen; cilia ochreous white; the underside grey-white slightly irrorated with fuscous, the costal area tinged with ochreous, a blackish discoidal spot and sinuous postmedial line.

Ab. 1. *nigridens*. Fore wing with the lines black and strong.

Hab. Britain, Leech Coll.; Ireland, Derry (*Salvage*); France, Sand Coll.; Denmark, Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland; N. Italy; Scandinavia; Russia; Armenia; Asia Minor, Pontus. *Exp.* 34–44 millim.

Larva. Meyr. Brit. Lep. p. 62; Barrett, Lep. Brit. v. p. 338, pl. 226. f. 3.

Brown or ochreous brown; dorsal line paler, traversing a series of dark brown V-shaped marks; subdorsal line pale, partly black-edged above; spiracular line pale; posterior dorsal dots of each segment outside the dark mark. Food-plants: seeds and buds of Elm, Poplar, and *Salix*. 4–6.

2699. Amathes bicolorago. (Plate CVII. fig. 2.)

Xanthia bicolorago, Guen. Noct. i. p. 397 (1852); Smith, Cat. Noct. N. Am. p. 218.

Xanthia ferrugincoides, Guen. Noct. i. p. 398 (1852); Staud. Cat. Lep. pal. p. 206.

Xanthia spurcata, Wlk. xi. 749 (1857).

Head and thorax fulvous; abdomen ochreous dorsally suffused with fuscous. Fore wing fulvous yellow, the terminal half suffused with fuscous, less strongly on terminal area; subbasal line brown, waved, from costa to submedian fold; antemedial line fuscous, angled outwards below costa and in submedian fold and inwards on median nervure and vein 1: orbicular and reniform defined by brown, the former oblique elliptical, the latter rather constricted at middle and with small blackish spot in its lower part; medial line bounding the dark area, angled inwards in cell, outwards on median nervure and inwards in submedian fold; postmedial line indistinct, bent outwards below costa, then rather strongly dentate and produced to black points on the veins, oblique below vein 4; subterminal line ochreous, defined by the contrast between the fuscous and paler terminal areas, angled outwards at vein 7 and excurved at middle; a terminal series of slight dark lunules. Hind

wing ochreous suffused with fuscous except basal area; cilia reddish ochreous; the underside ochreous irrorated with fuscous, the costal area suffused with rufous and the terminal area with fuscous towards tornus, a discoidal spot and diffused sinuous postmedial line.

Ab. 1. *ferrugineoides*. Fore wing without fuscous suffusion on terminal half, the markings rufous and more distinct; hind wing ochreous, the inner area slightly tinged with fuscous, the termen with rufous; the underside with the discoidal spot and postmedial line indistinct.

Hab. Canada, Orilla (*Bush*), 2 ♂, type *spurcata*; U.S.A., Eastern States to Pennsylvania and West to Mississippi, (*Doubleday*) 2 ♂, type and type *ferrugineoides*, (*Hagen*) 4 ♂, 1 ♀, (*Packard*) 2 ♂, Massachusetts, Beverley, 1 ♂, Cambridge, 2 ♂, New York, Schenectady, 2 ♂, 1 ♀, Lewis Co. (*W. W. Hill*), 1 ♂, Center (*W. W. Hill*), 1 ♂, 1 ♀. *Exp.* 32–40 millim.

2700. Amathes helvola.

Bombyx helvola, Linn. Syst. Nat. ed. x. p. 507 (1758); Clerck, Icones, pl. 4. f. 8; Staud. Cat. Lep. pal. p. 206.
Noctua rufina, Schiff. Wien. Verz. p. 86 (1776); Hübn. Eur. Schmett., Noct. f. 184; Dup. Lep. Fr. vii. p. 473, pl. 130. f. 3.
Noctua catenata, Esp. Schmett. iv. p. 123. f. 1 (1788).
Noctua punica, Bork. Eur. Schmett. iv. p. 687 (1792).
Orthosia sibirica, Staud. Stett. ent. Zeit. 1882, p. 46.
Orthosia cinnamomea, Fuchs, Soc. Ent. xviii. p. 3 (1903).

Head and thorax bright chestnut; palpi redder at sides; antennæ whitish at base; the hair on pectus and fore tibiæ whitish; abdomen pale rufous, brownish at base. Fore wing bright chestnut slightly tinged with grey, except on ante- and postmedial areas; subbasal line indistinct, grey, from costa to submedian fold; antemedial line indistinct, grey, oblique from costa to submedian fold; orbicular and reniform indistinct, greyish defined by chestnut, the former rather oblique elliptical, the latter constricted at middle; a diffused rufous medial line oblique from costa to lower angle of cell where it is angled; postmedial line indistinct, grey defined by rufous on outer side, bent outwards below costa, then minutely waved, incurved below vein 4; subterminal line indistinct, greyish defined on inner side by small maculate rufous marks, slightly angled outwards at vein 7 and excurved at middle. Hind wing pink suffused with fuscous except costal area and termen; cilia pink; the underside whitish tinged with pink, the apical half of costal and terminal areas irrorated with pink, traces of a curved postmedial line.

Ab. 1. *sibirica*. Paler; forewing yellowish.—Altai, W. Turkestan.

Ab. 2. *cinamomea*. Fore wing much more suffused with grey, the brown postmedial area darker.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland;

Spain; Corsica; Italy; Russia, Livonia; Armenia; Asia Minor, Pontus; W. Siberia, Altai; W. Turkestan, Tarbagatai Mts. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 62; Barrett, Lep. Brit. v. p. 335, pl. 226. f. 2.

Brown, brownish green, or reddish ochreous; dorsal line whitish, indistinct; spiracular line broad, white. Food-plants: Oak, Elm, Hazel, &c. 4–6.

Sect. III. (*Dyschorista*). Antennæ of male ciliated.

A. Hind wing uniformly tinged with fuscous.
  a. Fore wing with black bars from costa at the lines ..... *litura.*
  b. Fore wing without black bars from costa at the lines.
    a^1. Fore wing with pale streaks on the veins.
      a^2. Fore wing with the antemedial line angled outwards below costa, then excurved .... *gratiosa.*
      b^2. Fore wing with the antemedial line oblique, waved.
        a^3. Fore wing with the markings distinct ..... *lucida.*
        b^3. Fore wing with the markings indistinct ..... *deleta.*
    b^1. Fore wing without pale streaks on the veins.
      a^2. Fore wing with the postmedial line strongly dentate. *mansueta,*
      b^2. Fore wing with the postmedial line minutely dentate ..... *incerta.*
B. Hind wing fuscous with the costal area pale ..... *phæosoma.*
C. Hind wing fuscous with the veins reddish... ..... *immaculata.*
D. Hind wing greyish more or less tinged with fuscous and with diffused dark subterminal band.
  a. Fore wing with black bar from costa at subterminal line. *purpurea.*
  b. Fore wing without black bar from costa at subterminal line.
    a^1. Fore wing with the orbicular figure-of-8 shaped ..... *americana.*
    b^1. Fore wing with the orbicular quadrate, open above ... *puta.*
E. Hind wing yellowish white.
  a. Fore wing with series of small black spots on inner side of subterminal line ..... *ralla.*
  b. Fore wing without black spots on inner side of subterminal line.
    a^1. Fore wing with the markings dark brown..... *inops.*
    b^1. Fore wing with the markings pale rufous ..... *decipiens.*

2701. Amathes litura.

Noctua litura, Linn. Faun. Suec. ed. ii. p. 320 (1761); Esp. Schmett. iv. pl. 177. ff. 4–5; Hübn. Eur. Schmett., Noct. f. 127; Dup. Lép. Fr. vii. p. 104, pl. 79. f. 6; Frr. Neue Beitr. pl. 335; Steph. Ill. Brit. Ent., Haust. ii. p. 145; Staud. Cat. Lep. pal. p. 207.
Noctua polluta, Esp. Schmett. iv. pl. 127. f. 5 (1788).
Noctua ornatrix, Hübn. Eur. Schmett., Noct. f. 843 (1827); Frr. Neue Beitr. pl. 95. f. 1.
Orthosia meridionalis, Staud. Cat. Lep. Eur. p. 117 (1871).
Orthosia borealis, Sparre-Schnieder, Forh. Vid. Sels. Christ. 1882, no. 1, p. 69.
Orthosia saturata, Schultz, Illustr. Zeitsch. Ent. v. p. 349 (1900).

Head and thorax grey-brown suffused with rufous; tips of palpi and sides of frons blackish; tarsi blackish with pale rings; abdomen grey-brown. Fore wing grey suffused with reddish brown and irrorated with brown especially on basal area; subbasal line black, from costal to submedian fold, with black point beyond it in cell; antemedial line indistinctly double, with prominent black striga from

costa on its outer edge, oblique, waved; orbicular and reniform large with pale fuscous centres and grey annuli, the former oblique elliptical, the latter angled inwards on median nervure; a diffused rufous medial line with blackish striga on it from costa, oblique from costa to lower angle of cell; postmedial line indistinctly double with two black striæ from costa, bent outwards below costa, then somewhat dentate and produced to slight black points on the veins,

Fig. 164.—*Amathes litura*, ♂. ½.

incurved below vein 4; subterminal line indistinct, greyish defined on inner side by two prominent black spots below costa, then by a series of black points, slightly angled outwards at vein 7 and excurved at middle; a slight waved fuscous terminal line; cilia with brown line near base and brown tips. Hind wing pale grey-brown with slight waved terminal line; cilia whitish with a fine brown line through them: the underside whitish grey irrorated with brown, a slight discoidal spot and indistinct somewhat waved postmedial line.

Ab. 1. *meridionalis*. Paler; fore wing bluish grey with rufous or fuscous medial shade.

Ab. 2. *saturata*. Fore wing suffused with fuscous from median area to termen.

Hab. Britain, Leech Coll.: France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Spain, Castile, Andalusia; Italy; Algeria; S. Russia; Armenia; Asia Minor, Pontus. *Exp.* 30–40 millim.

Larva. Meyr. Brit. Lep. p. 63; Barrett, Lep. Brit. v. p. 344, pl. 228. f. 1.

Dull yellowish green with darker freckles; dorsal and subdorsal lines pale, indistinct, with darker edges; spiracular line whitish yellow edged with black above; head tinged with brown. Food-plants: *Rubus*, *Salix*, *Rumex*, &c. 4–6.

*2702. Amathes gratiosa. (Plate CVII. fig. 3.)

Orthosia gratiosa, Staud. Hor. Soc. Ent. Ross. xvi. p. 76 (1881); id. Cat. Lep. pal. p. 206.

Head and thorax pale rufous slightly mixed with dark brown; sides of palpi and frons blackish; antennæ black except at base; fore and mid tarsi blackish with pale rings; abdomen pale brown irrorated with dark brown. Fore wing pale rufous thickly irrorated with dark brown, the veins streaked with white; subbasal line represented by slight double striæ from costa and cell filled in with

whitish ; antemedial line double, blackish filled in with white, angled outwards below costa, then evenly curved ; claviform absent ; orbicular and reniform large, with whitish annuli slightly defined by black, the former oblique elliptical ; medial line diffused, dark, excurved from costa to lower angle of cell, then incurved ; postmedial line double, black filled in with white, slightly bent outwards below costa, incurved below vein 4, some pale points beyond it on costa ; subterminal line formed of slight whitish marks, defined on inner side by an oblique black bar from costa to vein 7, then by small somewhat dentate black spots, angled outwards at vein 7 and slightly excurved at middle ; a series of black points just before termen connected by a crenulate black line : cilia pale rufous with two slight brown lines through them. Hind wing pale reddish brown slightly tinged with fuscous ; cilia whitish tinged with rufous and with slight brown line near base ; the underside whitish irrorated with brown, the costal area slightly tinged with rufous, a slight dark discoidal lunule and indistinct curved postmedial line.

Hab. Asia Minor, Pontus, Amasia, in Coll. Püngeler. *Exp.*, ♂ 30, ♀ 34 millim.

2703. Amathes lucida.

Noctua lucida, Hüfn. Berl. Mag. iii. p. 302 (1767).
Noctua nitida, Schiff. Wien. Verz. p. 86 (1776) ; Fabr. Mant. Ins. ii. p. 141 (1787) ; Hübn. Eur. Schmett., Noct. f. 180 ; Dup. Lép. Fr. vii. p. 277, pl. 117. f. 5 ; Frr. Beitr. pl. 118 ; Staud. Cat. Lep. pal. p. 206.
Noctua insueta, Frr. Neue Beitr. iii. p. 90, pl. 256. f. 3 (1839).

Head and thorax red-brown with a greyish tinge ; sides of palpi and frons blackish, the slight crests on pro- and metathorax tipped with black ; base of tibiæ and the tarsi fuscous ; abdomen red-brown suffused with fuscous except anal tuft and ventral surface. Fore wing red-brown slightly irrorated with fuscous, the veins whitish ; subbasal line represented by a slight black striga from costa and spots in and below cell, the spot in cell further from base ; the antemedial line double filled in with greyish, the outer line indistinct, slightly angled outwards below costa, then oblique, waved ; orbicular and reniform large, brown with whitish annuli slightly defined by brown, the former oblique elliptical ; a somewhat diffused fuscous incurved medial line from lower angle of cell to inner margin ; postmedial line unusually near termen, double filled in with greyish and defined by fuscous on outer side, excurved below costa, slightly incurved at discal fold, incurved below vein 4 ; subterminal line represented by an oblique blackish bar from costa almost conjoined to postmedial line, then by a series of pale striæ with black points on their inner side ; a fine waved black terminal line with series of black points in the interspaces just before termen ; cilia tinged with fuscous at tips. Hind wing fuscous brown with a reddish tinge ; cilia with fine ochreous line at base ; the underside greyish slightly tinged with rufous and thickly irrorated with fuscous, the terminal area suffused with fuscous, a black discoidal spot and curved postmedial line.

Hab. France, Sand Coll. ; Denmark, Leech Coll. ; Germany,

Zeller and Leech Colls.; Austria, Leech Coll.; Hungary, Leech Coll.; Switzerland, Zeller and Frey Colls.; Italy; Sicily; Sweden; Armenia; Asia Minor, Pontus. *Exp.* 30–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 182; Hffm. Raup. p. 117, pl. 31. f. 21 Olive-green with dorsal series of dark V-shaped marks; dorsal and subdorsal lines white; stigmatal stripe bright green; warts and hairs black. Food-plants: *Rumex*, *Primula*, and other low plants. 5.

2704. Amathes deleta. (Plate CVII. fig. 4.)

Orthosia deleta, Staud. Hor. Soc. Ent. Ross. xvi. p. 75 (1881); id. Cat. Lep. pal. p. 206.
Orthosia decolorata, Staud. Cat. Lep. pal. p. 206 (1901).

♂. Head, thorax, and abdomen pale rufous, the hair on pectus and base of abdomen greyish. Fore wing pale rufous, the veins rather paler; subbasal line very indistinct, pale, waved, from costa to submedian fold; antemedial line indistinct, oblique, slightly angled outwards below costa and above inner margin and excurved in submedian interspace; orbicular and reniform large, slightly defined by white, the former oblique elliptical, the latter somewhat constricted at middle; an indistinct waved rufous medial line; postmedial line indistinct, pale, slightly defined by small brown spots on outer side, bent outwards below costa, incurved at discal fold and below vein 4: subterminal line indistinct, pale, defined on inner side by slight dark spots, somewhat angled outwards at veins 6 and 3; a fine waved dark line just before termen; cilia with fuscous line through them. Hind wing whitish almost uniformly suffused with fuscous brown; cilia whitish tinged with pink; the underside whitish tinged with pink and slightly irrorated with rufous.

Ab. 1. *decolorata*. Paler; fore wing reddish grey.

Hab. Armenia, 1 ♂; Asia Minor, Pontus, Taurus. *Exp.* 34 millim.

*2705. Amathes mansueta.

Cerastis mansueta, Herr.-Schäff. Eur. Schmett. ii. p. 322, Noct. f. 472 (1845); Staud. Cat. Lep. pal. p. 206.
Orthosia pontica, Staud. Cat. Lep. pal. p. 206 (1901).

Head and thorax grey-white slightly mixed with brown and faintly tinged with rufous; palpi and lower part of frons black; antennæ black; tarsi black with pale rings; abdomen grey irrorated with black. Fore wing grey irrorated with fuscous and tinged with olive-green, the medial area below the cell pale rufous; subbasal line double, waved, from costa to submedian fold, with some blackish suffusion beyond it on costa; antemedial line double, irregularly waved, rather oblique, angled inwards on vein 1; claviform absent; orbicular and reniform defined by blackish, the former very small, round, the latter constricted at middle and filled in with blackish; a waved medial line, oblique from costa to median nervure; post-

medial line double, bent outwards below costa, then strongly dentate and produced to a double series of black points on the veins, angled inwards in discal fold and incurved below vein 4, some white points beyond it on costa; subterminal line represented by a series of small whitish lunules with slight blackish lunules on their inner side, angled outwards at vein 7 and slightly excurved at middle; a series of small blackish spots just before termen connected by a crenulate line and with slight whitish points before them; cilia grey with a series of slight fuscous lunules followed by a fine line. Hind wing pale brown suffused with fuscous, the veins darker, the termen whitish between veins 3 and 1; cilia whitish tinged with brown at base; the underside white slightly tinged and irrorated with brown, a dark discoidal lunule, rather diffused postmedial line somewhat incurved at discal fold and waved terminal line from costa to vein 2.

Ab. 1. *pontica*. Head, thorax, and fore wing grey without any rufous or olive tinge.—Pontus.

Hab. ? Sicily; ? Armenia; Asia Minor, Pontus, Amasia, in Coll. Püngeler, Bithynia, Lydia, Cilicia; Palestine, in Coll. Püngeler. *Exp.* 34 millim.

2706. Amathes iners.

Caradrina iners, Germ. Faun. Ins. Eur. xvi. pl. 24 (1817); Treit. Schmett. Eur. v. 2. p. 271 (1825); Dup. Lép. Fr., Suppl. iii. p. 292, pl. 27. f. 2.
Noctua suspecta, Hübn. Eur. Schmett., Noct. f. 633 (1827); Staud. Cat. Lep. pal. p. 204.
Noctua congener, Geyer, Eur. Schmett., Noct. f. 862 (1827); Frr. Neue Beitr. iii. pl. 209. ff. 2, 3.
Orthosia lævis, Dup. Lép. Fr. vi. p. 65, pl. 76 (nec Hübn.).

Head, thorax, and abdomen grey mixed with pale brown; palpi tinged with fuscous at sides; pectus whitish; anal tuft of male pale rufous. Fore wing brownish grey irrorated with fuscous and slightly tinged with rufous; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line indistinct, double, waved, incurved in cell; claviform minute, slightly defined by brown; orbicular and reniform moderate with whitish annuli slightly defined by dark scales, the former upright elliptical; a slight medial shade, oblique to median nervure; postmedial line indistinctly double, bent outwards below costa, then minutely dentate and produced to slight black streaks on the veins, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line indistinct, pale, slightly defined on each side by brown, somewhat excurved below vein 7 and at middle; a terminal series of black points; cilia with a fine whitish line at base. Hind wing pale suffused and irrorated with brown; cilia white with a dark line through them except towards tornus; the underside whitish irrorated with pale brown, a slight discoidal spot and sinuous postmedial line.

Ab. 1. *suspecta*. Head, thorax, and fore wing bright rufous; abdomen and hind wing reddish brown.

Hab. Britain, Leech Coll.; France; Germany, Zeller and Leech

Colls.; Austria, Leech Coll.; Hungary, Frey Coll.; Switzerland; N. Italy; Russia, Livonia, Zeller Coll., Esthonia, Frey Coll., St. Petersburg, Frey Coll., Sarepta, Leech Coll., Ural Mts.; Armenia; W. Turkestan, Issyk Kul; W. Siberia, Altai; Mongolia; Tibet, Amdo; E. Siberia, Dahuria, Amurland; Kamtschatka; Japan, Yesso (*Pryer*), 1 ♀. *Exp.* 30–34 millim.

Larva. Meyr. Brit. Lep. p. 64; Barrett, Lep. Brit. v. p. 304, pl. 222. f. 2.

Purplish brown; dorsal line whitish; a subdorsal series of blackish marks; a faint lateral series of whitish freckles; subspiracular line pale, greenish-tinged; head yellow-brown marked with black. Food-plants: Birch, Poplar. 5.

2707. Amathes phæosoma, n. sp. (Plate CVII. fig. 5.)

♀. Head and thorax pale brownish ochreous; abdomen fuscous brown, darker above. Fore wing pale brownish ochreous with slight dark irroration; traces of a subbasal waved line from costa to submedian fold; antemedial line very indistinct, oblique, waved; orbicular with faint brown outline, round; reniform with slight whitish annulus faintly defined by brown, constricted at middle and with its lower part filled in with pale fuscous; traces of a diffused medial line oblique from costa to lower angle of cell, then inwardly oblique and sinuous: postmedial line almost obsolete, bent outwards below costa, then dentate and produced to a series of dark points on the veins, oblique below vein 4; the postmedial area rather darker; subterminal line indistinct, pale, defined on inner side by diffused dentate dark marks, slightly angled outwards at vein 7 and excurved at middle; a series of black points just before termen connected by a slight waved terminal line; cilia pale at base, mixed with fuscous at tips. Hind wing fuscous brown, the costal area whitish; cilia whitish tinged with brown; the underside whitish slightly irrorated with brown, a discoidal point and sinuous postmedial line with diffused spot at discal fold.

Hab. Punjab, Kulu, Sultanpur (*G. Young*), 1 ♀ type. *Exp.* 36 millim.

*2708. Amathes immaculata.

Orthosia immaculata, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 433; Smith, Cat. Noct. N. Am. p. 220.

♂. Head and thorax red-brown; abdomen fuscous. Fore wing uniform reddish brown, the lines obsolete; orbicular and reniform small, black, indistinct; a diffused black terminal band; cilia red. Hind wing brownish fuscous, the veins red; cilia red tipped with white; the underside brownish fuscous, with the veins and costal area reddish.

Hab. U.S.A., S. Nevada. *Exp.* 37 millim. This species is unknown to me.

2709. Amathes purpurea. (Plate CVII. fig. 6.)

Orthosia purpurea, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 125 (1874); Smith, Cat. Noct. N. Am. p. 217.
Orthosia crispa, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 276 (1875).

Head and thorax pale grey mixed with red-brown; abdomen grey suffused with brown. Fore wing grey with a slight purplish tinge suffused and irrorated with red-brown; subbasal line indistinct, double, waved, from costa to submedian fold; antemedial line indistinct, double, angled outwards below costa, in submedian fold and above inner margin, and inwards in cell and on vein 1; orbicular and reniform slightly defined by brown, the former oblique elliptical, open above, the latter constricted at middle and with its lower part filled in with black; a rather diffused blackish medial line, oblique from costa to lower angle of cell, then inwardly oblique and sinuous; postmedial line double, with blackish spot at costa, bent outwards below costa, then slightly dentate, somewhat angled inwards at discal fold and incurved below vein 4, some grey points beyond it on costa; subterminal line indistinct, grey, defined on inner side by a dark shade and oblique bar from costa, then by a series of points in the interspaces, angled outwards at vein 7 and incurved at submedian fold; a series of dark points just before termen connected by a slight waved line. Hind wing grey-white suffused and irrorated with brown, a brown terminal line; the underside whitish irrorated with red-brown, a discoidal lunule and indistinct curved postmedial line.

Ab. 1. *crispa*. Ground-colour of head, thorax, and fore wing pale chestnut, the last with the postmedial area darker; hind wing pale chestnut suffused with brown except costal and terminal areas, a dark discoidal lunule and diffused subterminal band; the underside chestnut; abdomen with the lateral fringes and ventral surface rufous.

Hab. Canada, Vancouver (*J. J. Walker*), 1 ♂; U.S.A., Oregon, 1 ♂, 1 ♀, California, Sanzalito, 3 ♂, 1 ♀, type and type *crispa*. *Exp.* 36–40 millim.

*2710. Amathes americana.

Orthosia americana, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 434; Smith, Cat. Noct. N. Am. p. 219.

Grey-brown tinged with flesh-red. Fore wing with the lines indistinct; antemedial line double, oblique, waved; orbicular and reniform with slight pale annuli, the former figure-of-8 shaped, the latter large, quadrangular, with dark spot in lower extremity; postmedial line double, bent outwards below costa, then minutely dentate and produced to dark points on the veins, slightly incurved at discal fold, incurved below vein 4; subterminal line distinct, pale, defined on inner side by a broad red shade, excurved at middle and somewhat dentate at veins 4, 3. Hind wing greyish suffused with fuscous brown, the cilia greyish; the underside greyer irrorated

with brown, a dark discoidal lunule and narrow bisinuate post-medial line.

Hab. U.S.A., New Jersey. *Exp.* 40 millim. This species is unknown to me.

2711. Amathes puta. (Plate CVII. fig. 7.)

Xanthia puta, Grote, Trans. Am. Ent. Soc. i. p. 347, pl. 7. f. 50 (1868); Smith, Cat. Noct. N. Am. p. 223.

Xanthia curta, Grote & Rob. Trans. Am. Ent. Soc. iv. p. 431 (1873); Smith, Cat. Noct. N. Am. p. 218.

Head, thorax, and abdomen grey mixed with red-brown. Fore wing grey suffused with fiery rufous; subbasal line diffused, waved, from costa to submedian fold; antemedial line double, waved, oblique; orbicular and reniform indistinctly defined by brown, the former rather quadrate, open above and below, the latter with its lower part obscured by the diffused fuscous medial line which is oblique from costa to lower angle of cell, then sinuous; postmedial line indistinct, double, bent outwards below costa, then minutely waved, excurved to vein 4, then incurved; postmedial and terminal areas rather darker except at apex; subterminal line pale, defined on inner side by a series of slight brown marks, slightly angled outwards at vein 7 and excurved at middle; a terminal series of black points; cilia brown with a pale line at base. Hind wing whitish suffused and irrorated with brown, a darker terminal line: cilia whitish tinged with brown; the underside white irrorated with brown, a black discoidal lunule and indistinct curved post-medial line.

Hab. Canada (*Norman*), 1 ♀, Alberta, Calgary (*Wolley-Dod*), 1 ♀; U.S.A., E. States to Pennsylvania and west to the Mississippi Valley and Colorado, New York, 1 ♂, 2 ♀ (*Walsingham*), 1 ♂. *Exp.* 32 millim.

2712. Amathes ralla. (Plate CVII. fig. 8.)

Xanthia ralla, Grote & Rob. Trans. Am. Ent. Soc. i. p. 346, pl. vii. f. 49 (1868); Smith, Cat. Noct. N. Am. p. 217.

♂. Head, thorax, and abdomen yellow suffused with bright rufous, the last whitish at base. Fore wing yellow suffused and irrorated with bright rufous; subbasal line indistinctly double, rufous, waved, from costa to submedian fold, with dark point on its outer edge in cell; antemedial line double, rufous, waved, with dark point before it in cell; orbicular and reniform defined by brown, the former rather oblique elliptical, open above, the latter constricted at middle and with its centre partially defined by fuscous; a diffused rufous medial line excurved at middle; postmedial line indistinctly double, defined by brown on outer side, oblique from costa to vein 7 and incurved below vein 4; subterminal line only defined by a series of small black spots on its inner side between veins 7 and 2 and the area beyond it being suffused with rufous except at apex; a terminal series of small black spots; cilia red-brown with a fine yellowish

line at base. Hind wing white tinged with yellow; the underside slightly irrorated with rufous, a slight discoidal lunule and curved postmedial line.

Hab. U.S.A., East and Middle States, New York, 2 ♂. *Exp.* 34 millim.

2713. Amathes inops. (Plate CVII. fig. 9.)

Orthosia inops, Grote, Bull. U.S. Geol. Geog. Surv. Terr. vi. p. 270 (1881); Smith, Cat. Noct. N. Am. p. 218.

♀. Head and thorax yellow mixed with rufous; abdomen white tinged with ochreous. Fore wing yellow suffused with rufous and irrorated with dark brown; subbasal line brown, waved, from costa to submedian fold; antemedial line brown, rather diffused, angled outwards below costa, excurved below cell and angled inwards on vein 1; orbicular and reniform defined by brown, the former small, round, the latter constricted at middle and with its lower part filled in with fuscous; a rather diffused medial line oblique from costa to lower angle of cell, then inwardly oblique; postmedial line bent outwards below costa, then produced to slight streaks on the veins, excurved to vein 4, then incurved; subterminal line indistinct, pale, defined by dark brown on inner side, very slightly angled outwards at vein 7 and excurved at middle; a fine brown terminal line; cilia dark at tips. Hind wing whitish tinged with brown especially towards termen; a fine brown terminal line; the underside with the costal and terminal areas tinged with rufous and irrorated with brown, an indistinct discoidal lunule and sinuous postmedial and subterminal lines.

Hab. U.S.A., Maine, Kittery Point, 1 ♀ type. *Exp.* 30 millim.

2714. Amathes decipiens. (Plate CVII. fig. 10.)

Orthosia decipiens, Grote, Bull. U.S. Geol. Geog. Surv. Terr. vi. p. 269 (1881); Smith, Cat. Noct. N. Am. p. 217.

♀. Head and thorax yellow suffused with rufous; abdomen yellow slightly tinged with brown. Fore wing yellow suffused with purplish rufous; subbasal line very indistinct, rufous, from costa to submedian fold; antemedial line oblique, waved, indistinct; orbicular and reniform slightly defined by rufous, the former round, the latter narrow and strongly constricted at middle, its lower part filled in with pale fuscous; an indistinct rufous medial shade, oblique from costa to lower angle of cell; postmedial line indistinct, bent outwards below costa, then slightly waved, incurved below vein 4; subterminal line yellow defined on inner side by somewhat deeper rufous, angled outwards at veins 6 and 3 and inwards at veins 5 and 2; a terminal series of slight rufous lunules; a fine pale line at base of cilia. Hind wing pale yellow. Underside of both wings pale yellow.

Hab. U.S.A., N. Indiana, 1 ♀ type. *Exp.* 44 millim.

Subsp. 1. ♀. Smaller; fore wing without the pale line at base of cilia.

Hab. Canada, Vancouver I. (*J. J. Walker*), 1 ♀. *Exp.* 36 millim.

Genus **AUSTRAMATHES**, nov.

Type, *A. purpurea*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching vertex of head, fringed with long hair in front, the 3rd long; frons smooth; eyes large, rounded; antennæ of female ciliated; head and thorax smoothly clothed with hair and hair-like scales, the prothorax with large divided crest, the metathorax with spreading crest; pectus clothed with long hair; abdomen with some rough hair at base but without crests. Fore wing rather broad, the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of disco-cellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2715. Austramathes purpurea.

Graphiphora purpurea, Butl. Cist. Ent. ii. p. 490 (1879); Hudson, New Zealand Moths & Butterflies, p. 8, pl. v. f. 32.
Xanthia ceramodes, Meyr, Trans. N. Z. Inst. xix. p. 31 (1887).

♀. Head and thorax deep purple-red with a few white scales; palpi ochreous in front; tegulæ and prothoracic crest tipped with ochreous; pectus rufous; abdomen red-brown, paler at base, darker at extremity. Fore wing deep purple-red, irrorated with a few white scales; subbasal line represented by white points below

Fig. 165.—*Austramathes purpurea*, ♀. ¾.

costa and cell; antemedial line indistinct, defined by white scales, oblique, dentate; an oblique white and black line across cell representing outer edge of orbicular, connected by a U-shaped mark with black-brown spot in it with the reniform which is defined by white, small and constricted at middle, partly open below and with a short black-brown streak beyond it; postmedial line indistinct, defined by white scales on outer side, slightly bent outwards below costa, then dentate, excurved to vein 4, then oblique and incurved in submedian fold, some whitish points beyond it on costa; hardly a trace of the subterminal line; a terminal series of slight dark points. Hind wing ochreous, suffused with red-brown on basal half, deep red-brown on terminal half; cilia whitish at tips; the underside ochreous thickly irrorated with red-brown; a

black-brown discoidal lunule, maculate sinuous postmedial line and some spots on termen.

Hab. N. Zealand, N. Island, Wellington, S. Island, Dunedin, Otago (*Hutton*), 1 ♀ type. *Exp.* 40 millim.

Genus ATETHMIA.

	Type.
Tethea, Ochs, Schmett. Eur. iv. p. 64 (1816), non descr. nec *Tethia*, Lam. Pisc. 1816, or *Tethya*, Oken, Spong. 1815 ...	*ambusta.*
Atethmia, Hübn. Verz. p. 238 (1827)	*xerampelina.*
Cirrœdia, Guen. Noct. i. p. 401 (1852)	*xerampelina.*
Eucirrœdia, Grote, Can. Ent. vii. p. 206 (1875)	*pampina.*

Proboscis fully developed; palpi obliquely porrect to just beyond the large frontal tuft; fringed with hair below; frons smooth; eyes large, rounded; antennæ of male minutely serrate and fasciculate; head and thorax clothed with hair and hair-like scales; tegulæ dorsally produced to a ridge; prothorax with dorsal ridge-like crest; pectus clothed with long hair; abdomen rather triangular, with rough hair at base and lateral fringes of hair, but without crests. Fore wing with the apex produced and acute; the termen crenulate, slightly excised to vein 4 where it is angled, then oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen crenulate and excurved at middle; veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with cell near base only.

A. Fore wing with the orbicular large ..... *pampina.*
B. Fore wing with the orbicular absent.
  a. Fore wing without pale streaks on the veins ..... *xerampelina.*
  b. Fore wing with pale streaks on the veins ..... *ambusta.*

2716. Atethmia pampina. (Plate CVII. fig. 11.)

Cirrœdia pampina, Guen. Noct. i. p. 402, pl. 7. f. 2 (1852); Smith, Cat. Noct. N. Am. p. 224.

Head and thorax orange suffused with fiery red, the scales tipped with greyish; abdomen yellowish tinged with red and with slight red-brown segmental lines, the ventral surface red-brown, the hair tipped with grey. Fore wing orange suffused with purplish red, less so on costal area; traces of a subbasal line from costa to median nervure; antemedial line slightly defined by yellowish on inner side, oblique, very slightly angled outwards below costa and excurved below submedian fold; orbicular and reniform large or moderate, purplish red defined by yellowish, the former elliptical, the latter constricted at middle; postmedial line defined by yellow on outer side, slightly angled outwards below costa and incurved below vein 4; subterminal line yellowish defined by purplish-red suffusion on inner side, dentate, angled outwards at veins 6 and 4, then incurved; cilia red-brown. Hind wing fiery red, the basal and costal areas paler; the underside yellowish, the costal and terminal areas to vein 2 irrorated with red, a discoidal lunule and sinuous red-brown postmedial line.

Ab. 1. Head, thorax, and fore wing purplish pink with hardly a trace of yellow, the markings indistinct.

Ab. 2. Ground-colour pale brownish ochreous, not tinged with orange or red except at extremity of abdomen and on hind wing.

Hab. Canada (*Norman*), 3 ♂, Nova Scotia (*Redman*), 1 ♂, 1 ♀, Alberta, Calgary (*Wolley-Dod*), 5 ♂, Br. Columbia, Coldstream Ranch (*Miss Ricardo*), 1 ♂; U.S.A. south to Virginia and west to the Rocky Mts., 4 ♂, 4 ♀ (*Doubleday*), 1 ♂ type, New York, 2 ♂. *Exp.* 36–48 millim.

2717. Atethmia xerampelina.

Noctua xerampelina, Esp. Schmett. iv. pl. 183. f. 5 (1793); Hübn. Eur. Schmett., Noct. f. 421 (1827); Dup. Lép. Fr. vii. p. 249, pl. 116. f. 1; Frr. Neue Beitr. ii. pl. 149. f. 2; Geyer, Eur. Schmett., Noct. f. 858; Mill. Icones, pl. 33. ff. 4–7; Staud. Cat. Lep. pal. p. 205.
Noctua centrago, Haw. Lep. Brit. p. 236 (1809); Curt. Brit. Ent. pl. 84; Steph. Ill. Brit. Ent., Haust. iii. p. 65.
Cirrœdia unicolor, Staud. Cat. Lep. Eur. p. 116 (1871).
Cirrœdia pallida, Staud. Iris, iv. p. 299 (1891).
Cirrœdia maculifera, Staud. Iris, iv. p. 299 (1891).

Head and thorax yellow suffused with rufous; abdomen ochreous yellow. Fore wing bright yellow; the 1st line medial, straight, slightly oblique; medial area suffused with rufous except cell and costal area; orbicular absent; reniform large, rufous, ill-defined; postmedial line straight from costa to vein 6, then oblique, the costal edge beyond it rufous with pale points; terminal area rufous

Fig. 166.—*Atethmia xerampelina*, ♂. ½.

except at apex, its inner edge oblique from termen just below apex to discal fold, where it is angled, then angled outwards at vein 4. Hind wing yellowish white slightly tinged with rufous, especially on terminal area; the underside with the costal area irrorated with rufous, traces of a curved postmedial line from costa to vein 3.

Ab. 1. *unicolor*. Fore wing nearly uniform reddish with the lines yellow.

Ab. 2. *pallida*. Paler; fore wing reddish or greyish ochreous; hind wing whitish.

Ab. 3. *maculifera*. Similar, but fore wing with dark reniform.

Hab. Britain, Scotland, Leech Coll., England, Leech Coll.; France, Zeller and Sand Colls.; Germany, Zeller and Leech Colls.; Austria, Leech Coll.; Hungary, Frey Coll.; Switzerland, Frey Coll.; Spain, Castile; Bulgaria; Armenia; Asia Minor, Pontus, Bithynia, Taurus; Syria; Palestine, 1 ♂. *Exp.* 32–36 millim.

Larva. Meyr. Brit. Lep. p. 60; Barrett, Lep. Brit. v. p. 357, pl. 229. f. 3.

Brownish grey with dark freckles; dorsal line pale, irregular, with dark edges; subdorsal and spiracular lines pale, dark-edged above. Food-plant, Ash. 10–6.

2718. Atethmia ambusta.

Noctua ambusta, Schiff. Wien. Verz. p. 88 (1776); Fabr. Mant. Ins. ii. p. 152 (1787); Dup. Lép. Fr. vii. p. 323, pl. 120. f. 1; Frr. Neue Beitr. ii. pl. 189; Staud. Cat. Lep. pal. p. 205.
Cirrœdia rubens, Staud. Cat. Lep. pal. p. 205 (1901).

(*rubens.*) Head and thorax reddish tinged with brown, the scales slightly tipped with grey; antennæ whitish at base; tarsi ringed with white; abdomen whitish tinged with red-brown. Fore wing reddish tinged with brown, the terminal area rather darker, the veins slightly streaked with whitish; traces of a pale subbasal line from costa to submedian fold; the 1st line nearly medial, whitish, excurved from costa to median nervure, then oblique; orbicular absent; reniform large, defined by whitish, somewhat constricted at middle; postmedial line whitish, strongly bent outwards below costa and oblique below vein 4; subterminal line whitish, excurved below veins 7 and 5. Hind wing white, the terminal area tinged with rufous except towards tornus; cilia brownish on apical half; the underside with the costal and terminal areas irrorated with rufous, an indistinct pale postmedial line from costa to vein 3.

Ab. 1. *ambusta.* Browner.

Hab. France, Sand Coll.; Germany, Zeller Coll.; Austria, Leech Coll.; Hungary, Frey and Leech Colls.; Switzerland; N. Italy; Asia Minor, Pontus; Palestine. *Exp.* 26–30 millim.

Larva. Kirby, Butt. & Moths Eur. p. 185; Hffm. Raup. p. 116, pl. 31. f. 14.

Dull flesh-colour with dorsal and subdorsal whitish lines, with oblique brown streaks between them; lateral stripe yellow. Food-plants: Apple, Pear. 5.

Genus JODIA.

	Type.
Jodia, Hübn. Verz. p. 234 (1827)	*rufago.*

Proboscis fully developed; palpi oblique to just beyond the frontal tuft and moderately fringed with hair below; frons smooth; eyes large, rounded; antennæ of male with fasciculate cilia; head and thorax clothed with hair and hair-like scales; tegulæ produced to a dorsal ridge; prothorax with ridge-like crest; pectus clothed with long hair; abdomen rather triangular, with some rough hair at base and lateral fringes of hair but without crests. Fore wing with the apex produced and acute, the termen oblique towards tornus; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

2719. Jodia rufago.

Jodia rufago, Hübn. Zutr. Ex. Schmett. i. p. 15, ff. 61, 62 (1827); Smith, Cat. Noct. N. Am. p. 223.
Cirrædia honesta, Wlk. xv. 1711 (1858).

♂. Head, thorax, and abdomen ochreous suffused with red; pectus, legs, and ventral surface of abdomen ochreous, the last slightly irrorated with brown. Fore wing ochreous suffused with red and slightly irrorated with black, especially on costal and terminal areas; the costal edge whitish; subbasal line very indistinct, fuscous, waved, from costa to submedian fold, or reduced to two black points; antemedial line very indistinct, ochreous, defined on each side by a few black scales, slightly waved; orbicular and reniform large, slightly browner than the ground-colour and defined by yellow, the former

Fig. 167.—*Jodia rufago*, ♂. ½.

elliptical, the latter constricted at middle; faint traces of a medial line towards inner margin; postmedial line formed by a double series of black points, connected by a faint crenulate line, slightly incurved below vein 4: an indistinct yellowish subterminal line slightly excurved at vein 7 and below middle. Hind wing yellowish suffused with purplish pink, the cilia pale yellow; the underside pale yellow slightly tinged with pink and irrorated with brown on the veins and costal area, a discoidal spot and postmedial line arising from costa near apex, slightly excurved at middle, and with dark points on the veins.

Hab. Canada; U.S.A., 1 ♂, Massachusetts, New Jersey, Texas, Florida (*Doubleday*), 1 ♂ type *honesta*. *Exp.* 34 millim.

Larva. Head scarcely bilobed, shining brown, mottled with pale dots; the vertical curved band broad, but not darker than ground-colour. Body pale brown, thickly mottled, reticulate with red-brown; dorsal line narrow, pale, interrupted intersegmentally, obscure; stigmatal band yellowish white, moderate, about as wide as spiracles and enclosing most of them, obsolete posteriorly; cervical shield velvety brown-black, distinctly cut by pale red lines, of which there are only traces on the rest of the body; anal plate quadrate, velvety brown, edged by a pale red line; feet pale; spiracles pale, black-rimmed.—H. G. D.

Genus **BRACHYCOSMIA**, nov.

Type, *B. digitalis*.

Proboscis aborted, small; palpi obliquely upturned, the 2nd joint fringed with long hair in front, the 3rd moderate; front smooth; eyes small, rentform; antennæ of male ciliated; head and thorax clothed with hair only, the pro-

thorax with slight triangular crest; tibiæ fringed with long hair; abdomen without crests, elongate in female. Fore wing triangular, the costa nearly straight, the apex somewhat produced, the termen obliquely curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from just below middle of discocellulars; 6, 7 shortly stalked; 8 anastomosing with the cell near base only.

2720. Brachycosmia digitalis.

Anchocelis digitalis, Grote, Bull. U.S. Geol. Geog. Surv. Terr. vi. p. 584 (1882); Smith, Cat. Noct. N. Am. p. 215.

♂. Head and thorax bright rufous; abdomen ochreous tinged with rufous and with dorsal brownish segmental bands. Fore wing bright rufous tinged with greyish except on medial area; a slight pale subbasal line from costa to submedian fold; antemedial line whitish, oblique, straight; claviform absent; orbicular and reniform very small with slight rufous annuli, the former round and

Fig. 168.—*Brachycosmia digitalis*, ♂. ½.

touching the antemedial line, the latter narrow, constricted at middle; postmedial line whitish, slightly bent inwards to costa, then oblique, straight; subterminal line indistinct, pale, minutely waved; a slight dark terminal line. Hind wing fuscous brown tinged with rufous; cilia pale rufous; the underside rufous suffused with brown except on medial costal area, a small discoidal spot and curved postmedial line.

♀. Fore wing with the ante- and postmedial lines strong, pure white.

Hab. U.S.A., Maine, New Hampshire, New York (*Hagen*), 1 ♂, 1 ♀, Illinois. *Exp.* 26 millim.

Genus COSMIA.

	Type.
Cosmia, Ochs. Schmett. Eur. iv. p. 84 (1816), non descr.; Treit. Schmett. Eur. v. (2) p. 379 (1825)	*fulvago.*
Ochria, Hübn. Verz. p. 233 (1827)	*aurago.*
Cirrhia, Hübn. Verz. p. 234 (1827)	*citrago.*
Citria, Hübn. Verz. p. 234	*fulvago.*
Mellinia, Hübn. Verz. p. 234	*palleago.*
Xanthia, Hübn. Tent. ined.	*fulvago.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint fringed with hair in front, the 3rd moderate; frons smooth; eyes large, rounded; antennæ of male minutely serrate and fasciculate or ciliated; head and thorax clothed with hair only, the prothorax with ridge-like crest; abdomen with some rough hair at base and lateral fringes of hair but without crests. Fore wing

with the apex produced and acute, the termen excurved at middle, then oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 shortly stalked or from angle; 8 anastomosing with the cell near base only.

Sect. I. (*Ochria*). Antennæ of male minutely serrate and fasciculate.

A. Fore wing with the basal and terminal areas purplish red... *aurago*.
B. Fore wing with the basal and terminal areas pale yellow.
  a. Fore wing with indistinct line just beyond the double postmedial line ..... *pallidago*.
  b. Fore wing without line beyond the double postmedial line. *siphuncula*.

2721. Cosmia aurago.

Noctua aurago, Schiff. Wien. Verz. p. 86 (1776); Fabr. Mant. Ins. ii. p. 159 (1787); Hübn. Eur. Schmett., Noct. ff. 196, 197; Dup. Lép. Fr. vii. p. 453, pl. 128. f. 4; Steph. Ill. Brit. Ent., Haust. iii. p. 65; Staud. Cat. Lep. pal. p. 207.
Noctua prætexta, Esp. Schmett. iv. pl. 124. f. 2 (1788).
Noctua fucata, Esp. Schmett. iv. pl. 124. ff. 3, 4 (1788).
Noctua rutilago, Borkh. Eur. Schmett. iv. p. 674 (1792); Hübn. Beitr. Ges. Schmett. pl. 2. f. L.

Head and thorax orange-yellow largely suffused with rufous; abdomen ochreous yellow. Fore wing with the basal area red suffused with purplish grey, leaving a yellow patch on base of costa and bounded by the indistinct oblique waved yellow antemedial line; orbicular and reniform small, defined by rufous, the former round, the latter narrow and constricted at middle; postmedial line indistinct, yellow, minutely dentate, angled inwards at discal fold and strongly incurved below vein 4, the area beyond it red suffused with

Fig. 169.—*Cosmia aurago*, ♂. ½.

purplish grey; the subterminal line yellow, slightly waved, excurved below vein 7, angled inwards at discal fold, excurved at middle, then incurved, some diffused yellow beyond it at apex; a slight yellowish line at base of cilia. Hind wing pale yellow with diffused red subterminal band forming streaks on the veins and maculate terminal line; the underside with the costal area irrorated with red, a slight discoidal spot.

Ab. 1. Fore wing with the medial area mottled with red.

Ab. 2. *fucata*. Much more uniform in colour; fore wing with the medial area suffused with red, the basal and terminal areas redder.

Hab. Britain, Leech Coll.; France; Denmark; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; N. & Centr. Italy; Corsica; S. Sweden; Finland. *Exp.* 30–38 millim.

Larva. Meyr. Brit. Lep. p. 51; Barrett, Lep. Brit. v. p. 371, pl. 232.

Brownish; dorsal, subdorsal, and spiracular lines pale greyish ochreous; tubercular dots pale; head ochreous. Food-plant, Beech. 5–6.

*2722. Cosmia pallidago.

Xanthia pallidago, Staud. Iris, xii. p. 377 (1899); id. Cat. Lep. pal. p. 208.

♂. Head, thorax, and abdomen dirty sulphur-yellow. Fore wing dirty sulphur-yellow, the lines indistinct, double; subbasal line from costa to submedian fold; antemedial line oblique, waved; claviform absent; orbicular and reniform slightly defined by fuscous, the former round, the latter with pale fuscous-edged spot in lower part; postmedial line strongly excurved beyond the cell and with another obsolescent line just beyond it. Hind wing dirty brownish white, darker towards termen; cilia white; the underside with slight postmedial line.

Hab. Asia Minor, Taurus, Zeitun. *Exp.* 34 millim. This species is unknown to me.

2723. Cosmia siphuncula, n. sp. (Plate CVII. fig. 12.)

Head and thorax ochreous yellow, sides of palpi, thorax, and patagia except outer edge suffused with rufous; tibiæ and tarsi tinged with rufous; abdomen ochreous. Fore wing ochreous yellow; subbasal line rufous, double, waved, from costa to submedian fold; antemedial line double, waved, oblique, angled inwards on median nervure; claviform defined by rufous; orbicular and reniform moderate, defined by rufous, the former erect elliptical, the latter with some rufous in upper part of cell and fuscous and grey in lower part; medial line rufous, angled inwards in cell to orbicular, then outwards to below end of cell; postmedial line double, waved, excurved from costa to vein 4, then incurved; subterminal line represented by a triangular rufous patch from costa with ochreous point on costa, then by a rufous line, angled outwards at vein 7, excurved at middle and incurved at submedian interspace; a fine red-brown terminal line; cilia ochreous tinged with rufous at base, fuscous at tips. Hind wing pale ochreous yellow, the inner area slightly tinged with brown to postmedial line which is obsolete towards costa and slightly excurved at median nervules; a diffused subterminal line except towards costa; a fine brown terminal line; the underside with the costal and terminal areas irrorated with rufous, a small discoidal spot, sinuous postmedial line, and diffused subterminal line.

Hab. Mongolia, Changai Mts.; E. Siberia, Amurland, 1 ♀ type, Radde in Coll. Püngeler, Ussuri. *Exp.* 40 millim.

Sect. II. (*Cosmia*). Antennæ of male ciliated.

A. Fore wing with the termen and cilia evenly curved.
a. Fore wing with the postmedial line double.
a^1. Fore wing with the postmedial line minutely dentate.
a^2. Fore wing with the medial line angled outwards on median nervure.
a^3. Fore wing without pale streaks on the veins.
a^4. Head and tegulæ rufous ..... *lutea.*
b^4. Head and tegulæ yellow.
a^5. Fore wing with the ground-colour pale yellow.
a^6. Fore wing with the medial line dentate below submedian fold..... *fulvago.*
b^6. Fore wing with the medial line straight below submedian fold..... *tunicata.*
b^5. Fore wing with the ground-colour brownish ochreous .... *gilvago.*
b^3. Fore wing with pale streaks on the veins.
a^4. Fore wing ochreous suffused with reddish... *palleago.*
b^4. Fore wing ochreous suffused with brown ... *ocellaris.*
b^2. Fore wing with the medial line excurved from costa to submedian fold..... *sulphurago.*
b^1. Fore wing with the postmedial line not dentate.
a^2. Fore wing with the postmedial line curved.
a^3. Fore wing with pale streaks on the veins ..... *cypreago.*
b^3. Fore wing with dark streaks on the veins ..... *vulpecula.*
b^2. Fore wing with the postmedial line almost straight ..... *rectilineata.*
b. Fore wing with the postmedial line single.
a^1. Fore wing with the medial line nearly straight, oblique..... ..... *citrago.*
b^1. Fore wing with the medial line angled outwards on median nervure.
a^2. Fore wing with the postmedial line angled outwards below costa and excurved at middle.
a^3. Fore wing with the ground-colour yellow.
a^4. Fore wing with the antemedial line oblique from costa to submedian fold where it is angled ..... *ledereri.*
b^4. Fore wing with the antemedial line angled inwards on median nervure.
a^5. Fore wing without two white spots on lower extremity of reniform ..... *melonina.*
b^5. Fore wing with two white spots on lower extremity of reniform ..... *distigmata.*
b^3. Fore wing with the ground-colour ochreous suffused with reddish and irrorated with brown ..... *albosignata.*
c^3. Fore wing with the ground-colour fiery red ... *pulchella.*
b^2. Fore wing with the postmedial line excurved from costa to vein 6, then oblique ..... *approximata.*
c^2. Fore wing with the postmedial line oblique throughout.
a^3. Hind wing yellow, the inner area suffused with brown .... *edentata.*
b^3. Hind wing uniform brown ..... *divergens.*

2724. Cosmia lutea.

Noctua lutea, Ström. Danske Vid. Selsk. Skrift. p. 78, f. 26 (1783); Staud. Cat. Lep. pal. p. 207.
Noctua flavago, Fabr. Mant. Ins. ii. p. 160 (1787); Borkh. Scriba, Beitr. 2, p. 142, pl. 10. f. 2 (1791); Steph. Ill. Brit. Ent., Haust. iii. p. 64; Smith, Cat. Noct. N. Am. p. 223.
Noctua togata, Esp. Schmett. iv. pl. 124. f. 1 (1788).
Noctua ochreago, Borkh. Eur. Schmett. iv. p. 671 (1792).
Noctua rubago, Don. Nat. Hist. Brit. Ins. x. pl. 338. f. 2 (1801).
Noctua silago, Hübn. Eur. Schmett., Noct. f. 191 (1827); Dup. Lép. Fr. vii. p. 462, pl. 129. f. 3; Frr. Neue Beitr. ii. pl. 135.

Head and thorax rufous mixed with purple-brown; thorax yellow, the base of patagia and patches on pro- and metathorax rufous; fore coxæ, tibiæ, and tarsi rufous; abdomen yellow, ventrally suffused with rufous. Fore wing yellow to orange-yellow; subbasal line represented by purple-brown striæ from costa and median nervure, with a triangular patch beyond it from costa to median nervure and spot above vein 1; antemedial line oblique, waved, more or less interrupted; orbicular represented by small brown spots on its edges and constricted at middle; a waved medial line excurved at middle, the area beyond it suffused with purple-brown to just beyond postmedial line and on costa to subterminal line; reniform a yellow patch on the brown area, constricted at middle and with purple-brown spots on its upper and lower parts; postmedial line double, bent outwards below costa, then dentate, excurved to vein 4, then incurved, some yellow points beyond it on costa; subterminal line represented by an oblique striga from costa, then by a series of small spots, angled outwards at vein 7 and excurved at middle; a terminal series of small lunules; cilia rufous and brown. Hind wing pale ochreous yellow, the costal and terminal areas irrorated with purplish red, a discoidal lunule, sinuous postmedial line, and diffused subterminal line from costa to vein 4.

Hab. Canada, Hudson's Bay, St. Martin's Falls (*Barnston*), 1 ♀, (*Norman*), 1 ♂, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 1 ♀, Vancouver (*J. J. Walker*), 2 ♂; U.S.A., N. & E. States, Massachusetts, Buffalo, 1 ♂, New York (*Hagen*, *Lintner*), 3 ♂; Britain, Scotland, Leech Coll., England, Leech Coll., Wales (*Salvage*); France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; N. Italy; Scandinavia; Russia, Livonia, Zeller Coll., Esthonia, Frey Coll.; W. Turkestan, Tarbagatai Mts.; W. Siberia, Altai, 3 ♀, Leech Coll.; E. Siberia, Amurland, Ussuri; Kamtschatka; Japan, Nikko (*Leech*), 1 ♀, Yokohama (*Pryer*), 1 ♂. *Exp.* 28–36 millim.

Larva. Meyr. Brit. Lep. p. 61; Barrett, Lep. Brit. v. p. 368, pl. 231. f. 1.

Dull pinkish ochreous freckled with brown; dorsal line pale, indistinct, with darker edges; spiracular line pale, rather broad; thoracic shield dark brown with three pale lines. Food-plant: catkins and leaves of *Salix caprea*. 4–6.

2725. Cosmia fulvago.

Noctua fulvago, Linn. Faun. Suec. p. 312 (1761); Borkh. Scriba, Beitr. 2, p. 144, pl. 10. f. 3; Steph. Ill. Brit. Ent., Haust. iii. p. 64; Staud. Cat. Lep. pal. p. 208.
Noctua cerago, Schiff. Wien. Verz. p. 87 (1776); Fabr. Mant. Ins. ii. p. 159 (1787); Hübn. Eur. Schmett., Noct. ff. 190, 444–5; Dup. Lép. Fr. vii. p. 459, pl. 129. ff. 1, 2; Frr. Neue Beitr. vii. pl. 673. ff. 1, 2.
Noctua flavescens, Esp. Schmett. iv. pl. 122. f. 2 (1788).

Head and thorax pale yellow; sides of palpi and frons and spots at base of patagia and on metathorax rufous; tibiæ and tarsi tinged with rufous; abdomen pale ochreous yellow. Fore wing pale yellow; subbasal line indistinctly double, rufous, excurved, from

Fig. 170.—*Cosmia fulvago*, ♂. ½.

costa to submedian fold, a quadrate rufous patch beyond it from costa to median nervure; antemedial line double, oblique, waved, interrupted; orbicular and reniform defined by rufous, the former round, the latter with small black annulus at its lower extremity; medial line rather diffused, oblique from costa to lower angle of cell, then dentate; postmedial line double, slightly bent outwards below costa, then dentate, incurved below vein 4, a triangular rufous patch beyond it from costa to vein 5 with pale points on costa; subterminal line represented by a curved series of small black-brown spots; cilia yellow slightly tinged with rufous at base, deep rufous at tips. Hind wing yellowish white, the inner area slightly tinged with ochreous.

Ab. 1. *flavescens*. Fore wing with the markings almost completely obsolete except the annulate spot at lower angle of cell.

Ab. 2. *asiatica*, Bang-Haas, ined. Fore wing more orange-yellow, the markings dark brown, the ante- and postmedial costal patches absent; cilia dark brown at tips.—Sir Daria.

Hab. Britain, Scotland, Leech Coll., England, Leech Coll., N. Wales (*Salvage*); France; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller Coll.; Hungary: Switzerland; Spain, Aragon, Catalonia; Italy; Russia, Esthonia, Frey Coll., Livonia, Zeller Coll.; Armenia; W. Turkestan, Sir Daria, 1 ♂, 1 ♀, Issyk Kul, Ala Tau; W. Siberia, Altai; E. Turkestan, Ili; E. Siberia, Amurland, Ussuri; Japan, Oiwake (*Pryer*), 1 ♂. *Exp.* 32–40 millim.

Larva. Meyr. Brit. Lep. p. 61; Barrett, Lep. Brit. v. p. 365, pl. 230. f. 2.

Pinkish brown with darker freckles; dorsal line paler with dark edges; thoracic shield dark brown with three pale lines. Food-plant: catkins and leaves of *Salix caprea*. 4–6.

2726. Cosmia tunicata. (Plate CVII. fig. 13.)

Xanthia tunicata, Græs. Berl. ent. Zeit. 1889, p. 259; Staud. Cat. Lep. pal. p. 207.

♂. Head and thorax yellow, the latter and patagia suffused with rufous; sides of palpi and frons rufous; tegulæ with slight rufous medial line; front of pectus tinged with rufous; abdomen pale yellow slightly tinged with rufous. Fore wing yellow; subbasal line represented by two slight rufous striæ from costa and a bar from cell with a rufous patch beyond them on costa; antemedial line slight, rufous, angled outwards below costa, then excurved in the interspaces and angled inwards on the veins, some slight rufous suffusion before it on inner area; claviform slightly defined by rufous; orbicular and reniform defined by rufous, the former round, the latter constricted at middle and with fuscous and grey spot in lower part; medial line incurved in cell, excurved at median nervure, then incurved, the area beyond it suffused with deep rufous extending to the subterminal line except between vein 7 and submedian fold; postmedial line double, rufous filled in with yellow, slightly bent outwards below costa, then minutely dentate, incurved below vein 4, some yellow points beyond it on costa; subterminal line represented by an oblique brown bar from costa, then by small brown spots and a sinuous line from vein 3 to inner margin, slightly angled outwards at vein 7 and excurved at middle; small diffused rufous spots before termen between veins 7 and 2; cilia pale rufous with a series of brown spots. Hind wing uniform pale ochreous yellow; the underside with slight sinuous rufous postmedial line and traces of a subterminal line from costa to vein 6.

♀. Patagia and thorax slightly tinged with rufous; abdomen whitish; fore wing without the rufous patch beyond subbasal line.

Hab. E. Siberia, Amurland, Sidemi, type † ♀ in Coll. Püngeler; Japan, Oiwake (*Pryer*), 1 ♂. *Exp.* 38–42 millim.

2727. Cosmia gilvago.

Noctua gilvago, Schiff. Wien. Verz. p. 87 (1776); Esp. Schmett. iv. pl. 176. f. 2 (1791); Hübn. Eur. Schmett., Noct. f. 443; Dup. Lép. Fr. vii. p. 465, pl. 129. ff. 4, 5; Hmpsn. Moths Ind. ii. p. 171; Staud. Cat. Lep. pal. p. 208.

Head and thorax fulvous yellow suffused with greyish fuscous especially on thorax; sides of palpi and frons brownish; tegulæ with slight medial brown line; abdomen ochreous dorsally suffused with greyish fuscous. Fore wing fulvous yellow suffused with greyish fuscous especially before the antemedial line, on outer part of medial area, and just beyond the postmedial line; a black point at base of vein 1; subbasal line indistinct, double, curved, from costa to submedian fold; antemedial line double, oblique, waved; claviform faintly defined by brown at extremity; orbicular and

reniform moderate, defined by brown, the former round, the latter with fuscous spot with greyish centre at lower extremity; medial shade oblique from costa to lower angle of cell, diffused outwardly; postmedial line double filled in with fulvous, bent outwards below costa, then very minutely waved, slightly angled inwards at discal fold and incurved below vein 4, the fuscous beyond it extending at costa to the subterminal line, which is defined by fuscous points on inner side and by diffused fuscous spots on outer especially at middle, slightly angled outwards at vein 7 and excurved at middle; a terminal series of slight dark lunules: cilia with diffused fuscous spots especially towards apex. Hind wing yellowish white, the inner area slightly tinged with brown; the underside with the costal area irrorated with brown, a slight discoidal lunule and sinuous postmedial line from costa to vein 2.

Ab. 1. Head, thorax, and fore wing much yellower, the last with the fuscous suffusion reduced to maculate bands, the points before the subterminal line black and prominent.

Ab. 2. Head, thorax, and fore wing ochreous whitish, the last with all the markings almost obsolete except the dark annulus at lower angle of cell and subterminal points; cilia rufous; hind wing whiter.

Hab. Britain, Leech Coll.; France, Sand and Leech Colls.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Italy, Leech Coll.; S. Scandinavia; Russia, Livonia; Armenia; Asia Minor, Pontus; W. Turkestan, Ala Tau, Ferghana; Kashmir, Goorais Valley (*Leech*), 4 ♂, 1 ♀ Punjab, Kulu, Sultanpur (*G. Young*), 2 ♂. *Exp.* 30–36 millim.

Larva. Meyr. Brit. Lep. p. 62; Barrett, Lep. Brit. v. p. 375, pl. 231. f. 2.

Pinkish brown; dorsal line paler, traversing a series of dark brown V-shaped marks; subdorsal line paler, partly edged with blackish above; spiracular line pale; a posterior series of dorsal points inside the dark mark on each segment. Food-plant: seeds of Elm. 5–6.

2728. Cosmia palleago.

Noctua palleago, Hübn. Eur. Schmett., Noct. ff. 192, 442 (1827); Dup. Lép. Fr. vii. p. 468, pl. 130. f. 1; Staud. Cat. Lep. pal. p. 208.
Xanthia austauti, Oberth. Ét. Ent. vi. p. 87, pl. 1. f. 3 (1881).

Head and thorax ochreous yellow slightly tinged with pink; pectus white; abdomen ochreous. Fore wing ochreous yellow tinged with pink; subbasal line very indistinct, rufous, double, slightly waved, from costa to submedian fold: antemedial line indistinct, double, oblique from costa to submedian fold; orbicular and reniform moderate, with whitish annuli defined by rufous, the former round, the latter with slight fuscous spot with whitish point on it at lower extremity; postmedial line indistinct, double, filled in with whitish, slightly bent outwards below costa, then very minutely waved, incurved below vein 4; subterminal line indistinct, pale, slightly waved, somewhat angled outwards at vein 7 and incurved

below vein 3, often with dark points on its inner side between veins 7 and 2; a slight waved terminal line. Hind wing yellowish white, the inner area tinged with brown; the underside whiter.

Ab. 1. *austauti*. Much paler, the ground-colour of head, thorax, and fore wing ochreous whitish.—Algeria.

Hab. S. France; Germany, Zeller and Leech Colls.; Austria, Leech Coll.; Hungary, Zeller and Leech Colls.; Italy; Algeria; S. Russia, Sarepta (*Christoph*); Asia Minor, Pontus. *Exp.* 34–40 millim.

2729. Cosmia ocellaris.

Noctua ocellaris, Borkh. Eur. Schmett. iv. p. 647 (1792); Staud. Cat. Lep. pal. p. 208.
Noctua gilvago, Hübn. Eur. Schmett., Noct. f. 193 (1827), nec Schiff.; Dup. Lép. Fr. vii. p. 465, pl. 129. f. 6.
Xanthia lineago, Guen. Noct. i. p. 396 (1852).
Xanthia intermedia, Habich, VI. Jhrsb. Wien. Ent. Ver. p. 49, pl. 1. f. 5 (1895).

Head and thorax rufous; antennæ whitish at base; abdomen ochreous. Fore wing ochreous almost entirely suffused with rufous, the veins slightly paler; subbasal line indistinct, double, from costa to submedian fold; antemedial line indistinct, double, filled in with yellowish, slightly angled inwards in cell, then oblique to submedian fold; orbicular and reniform with yellowish annuli defined by rufous, the former round, the latter with slight dark annulus with white centre in its lower extremity; postmedial line double filled in with yellow, slightly bent outwards below costa, then minutely waved, excurved to vein 4, then incurved: subterminal line yellowish defined on inner side by slight brown points, slightly angled outwards at vein 7 and excurved at middle; a slight waved terminal line; cilia rufous. Hind wing yellowish white, the inner area slightly tinged with brown; the underside whiter.

Ab. 1. *lineago*. Head, thorax, and fore wing more suffused with grey-brown.

Ab. 2. *intermedia*. Intermediate between *C. ocellaris* and *gilvago*.

Hab. Britain, Kent and Surrey; France; Germany, Zeller and Leech Colls.; Austria; Hungary; Switzerland; Spain, Andalusia; Italy; Algeria; S. Russia; W. Turkestan, Ala Tau, Ferghana, Sarawschan; W. Siberia, Altai. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 62; Barrett, Lep. Brit. v. p. 378, pl. 231. f. 3.

Yellowish grey with dark points. Food-plant: buds and leaves of Poplar. 4–6.

2730. Cosmia sulphurago.

Noctua sulphurago, Schiff. Wien. Verz. p. 86 (1776); Fabr. Mant. Ins. ii. p. 159 (1787); Hübn. Eur. Schmett., Noct. f. 194; Dup. Lép. Fr. vii. p. 455, pl. 128. f. 5; Staud. Cat. Lep. pal. p. 207.
Xanthia gilvago, ab. *innotata*, Failla, Ted. Nat. Sic. x. p. 29, pl. 1. f. 2 (1890).

Head and thorax yellow or orange-yellow; 3rd joint of palpi and

sides of frons brownish ; tips of tegulæ, dorsum of thorax, and outer edge of patagia red-brown or fuscous ; abdomen pale ochreous. Fore wing yellow usually more or less tinged with orange ; subbasal line represented by two brown striæ from costa and one from cell ; antemedial line oblique, waved, with another indistinct line beyond it ; orbicular yellow, figure-of-8-shaped with two dark points on it ; reniform with its centre greyish defined by brown spots and with yellow annulus constricted at middle ; medial line strong, brown, excurved from costa to median nervure, then incurved ; postmedial line indistinctly double, the outer line more prominent and dentate, excurved to vein 4, then oblique and with series of dark spots beyond it in the interspaces ; subterminal line represented by a series of obscure dentate brown spots ; a terminal series of blackish points ; cilia mixed with fuscous especially at tips. Hind wing very pale yellow, the termen and cilia rather darker ; the underside with slight discoidal lunule and sinuous postmedial line from costa to vein 4, the apical area slightly irrorated with brown.

Ab. 1. *innotata*. Fore wing with the subbasal line obsolete, the antemedial line obsolete except towards inner margin, the orbicular, reniform, and terminal points obsolete.—Sicily.

Hab. Germany, Zeller and Leech Colls. ; Austria, Leech Coll. ; Hungary, Leech Coll. ; ? Switzerland ; N. Italy ; Sicily ; S. Sweden ; Armenia. Exp. 32–36 millim.

Larva. Kirby, Butt. & Moths Eur. p. 188 ; Hffm. Raup. p. 118, pl. 32. f. 3.

Ashy grey with dorsal and subdorsal white lines with oblique brown bars between them ; a broad lateral white stripe tinged with reddish. Food-plant, Maple. 5.

2731. Cosmia cypreago, n. sp. (Plate CVII. fig. 14.)

♀. Head and thorax yellow suffused with red ; pectus whitish ; abdomen white tinged with brown. Fore wing yellow suffused with fiery red, the veins rather paler ; subbasal line represented by a slight red striga from costa and point below the cell ; antemedial line very ill-defined, double, waved, oblique, red, with some dark scales on it ; orbicular represented by a black point in cell ; reniform slightly defined by red with some dark scales on it, narrow and constricted at middle ; a curved red medial line with some dark scales on it ; postmedial line double, reddish filled in with yellow, excurved from costa to vein 4, then incurved ; subterminal line slightly defined by brown on inner side, angled outwards at vein 7 and excurved at middle ; cilia brown at tips. Hind wing nearly pure white, the cilia slightly tinged with yellowish ; the underside with the costal area slightly tinged with ochreous and irrorated with red.

Hab. Cyprus, Mountains (*Miss Bate*), 1 ♀ type. *Exp.* 30 millim.

2732. Cosmia vulpecula. (Plate CVII. fig. 15.)

Xanthia vulpecula, Led. Verh. zool.-bot. Ges. Wien, 1853, p. 374, pl. 3. f. 5; Staud. Cat. Lep. pal. p. 208.
Xanthia vulpina, Ev. Bull. Mosc. 1855, iv. p. 374.

♂. Head, thorax, and abdomen greyish ochreous suffused with rufous. Fore wing ochreous suffused with rufous and slightly irrorated with fuscous, the veins brown; subbasal line indistinct, waved, from costa to submedian fold, a dark patch beyond it on costa extending to the antemedial line which is indistinctly double, the inner line more prominent, slightly angled outwards below costa, oblique to submedian fold and bent inwards to inner margin; orbicular and reniform moderate, defined by brown, the former round; medial shade diffused outwardly, excurved to median nervure, then incurved; costal area suffused with fuscous from middle to subterminal line; postmedial line double, evenly curved; subterminal line with oblique fuscous bar from costa, then indistinct, angled outwards at vein 7, excurved and slightly waved at middle; a fine waved terminal line: cilia brown, pale at base. Hind wing pale ochreous suffused with fuscous from discal fold to inner margin except terminal area; diffused postmedial and subterminal lines except on costal area; cilia tinged with reddish; the underside with the costal area irrorated with brown, a slight discoidal spot, curved postmedial line, and traces of subterminal line.

Hab. W. Siberia, Altai, 1 ♂, Sajan Mts.; E. Siberia, Amurland, Ussuri. *Exp.* 38 millim.

2733. Cosmia rectilineata. (Plate CVII. fig. 16.)

Xanthia rectilineata, Hmpsn. Moths Ind. ii. p. 171 (1894).

Head and thorax whitish tinged with rufous; abdomen whitish suffused with fuscous brown, the anal tuft tinged with rufous. Fore wing ochreous tinged with rufous and irrorated and suffused with fuscous brown, especially before the antemedial line, beyond the postmedial line, and on terminal area; traces of a pale waved subbasal line from costa to submedian fold; antemedial line double filled in with ochreous, slightly excurved from costa to submedian fold, then slightly incurved; orbicular pale; reniform fuscous brown, strongly constricted at middle; medial shade incurved from costa to median nervure, then oblique, almost confluent with the reniform; postmedial line double filled in with ochreous, slightly excurved below costa and oblique below vein 4; subterminal line only defined by the area beyond it being dark, somewhat excurved below vein 7 and at middle; cilia fuscous with a whitish line at base. Hind wing yellowish white suffused with brown especially on inner area; the underside with slight discoidal lunule and traces of curved postmedial line.

Hab. Punjab, Kulu, Sultanpur (*G. Young*), 2 ♂, (*Hocking*), 1 ♀ type. *Exp.* 36 millim.

2734. Cosmia citrago.

Noctua citrago, Linn. Syst. Nat. ed. x. p. 518 (1758); Esp. Schmett. iv. pl. 175. ff. 5, 6; Sepp. Ins. iii. pl. 48; Hübn. Eur. Schmett., Noct. f. 188; Dup. Lép. Fr. vii. p. 450, pl. 128. ff. 2, 3; Frr. Beitr. iv. pl. 376; Staud. Cat. Lep. pal. p. 207.
Noctua ochrago, Esp. Schmett. iv. pl. 177. f. 1 (1791).
Xanthia subflava, Ev. Bull. Mosc. 1848, iii. [p. 219, 1855, iv. p. 371, & 1856, ii. pl. 1. f. 3.

Head and thorax orange-yellow mixed with red; abdomen ochreous with dorsal red-brown spots on first three segments. Fore wing orange-yellow irrorated with red, the veins rufous; a curved rufous subbasal line from costa to submedian fold; antemedial line rufous, angled outwards below costa and inwards in submedian fold, then bent outwards to inner margin; orbicular and reniform defined by rufous and with some rufous in centres, the former round, the latter constricted at middle; an oblique rufous medial line slightly excurved in cell and meeting the antemedial line at inner margin; an obliquely curved postmedial line, very slightly incurved at vein 2; an indistinct somewhat dentate subterminal line slightly angled outwards at vein 7 and excurved at middle; a fine waved terminal line. Hind wing very pale yellow; the underside with slight discoidal spot and sinuous postmedial line.

Ab. 1. *subflava*. Fore wing with the antemedial, postmedial, and terminal areas suffused with deep rufous; hind wing with indistinct rufous subterminal band and the cilia tinged with rufous or wholly suffused with brown.

Hab. Britain, Leech Coll.; France; Denmark (*Dohlmann*), Leech Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland; Italy; S. Sweden; S.E. Russia, Urals; Asia Minor, Pontus. *Exp.* 32–40 millim.

Larva. Meyr. Brit. Lep. p. 60; Barrett, Lep. Brit. v. p. 361, pl. 230. f. 1. Brownish grey or pinkish brown; dorsal and subdorsal lines pale, the latter edged above with blackish marks; spiracular area greyish white edged above by black marks. Food-plant. *Tilia*. 5–6.

2735. Cosmia ledereri. (Plate CVII. fig. 17.)

Xanthia ledereri, Staud. Iris, ix. p. 370, pl. iv. f. 12 (1896); id. Cat. Lep. pal. p. 207.

♂. Head and thorax ochreous slightly mixed with rufous, the palpi, frons, and front of pectus more rufous; abdomen yellowish slightly irrorated with rufous, whitish at base. Fore wing bright yellow irrorated with rufous, the veins rufous; a slightly curved rufous subbasal line from costa to submedian fold; antemedial line rufous, oblique from costa to submedian fold, then obliquely incurved; claviform small, defined by rufous; orbicular and reniform moderate, defined by rufous, the former round, the latter narrowing below and with some black at its lower extremity; a diffused rufous medial line oblique from costa to lower angle of cell, then

inwardly oblique; postmedial line rufous, bent outwards below costa, oblique to above vein 6, then inwardly oblique and sinuous; subterminal line rufous, forming a diffused oblique bar from costa, then indistinct, dentate, slightly angled outwards at vein 7 and excurved at middle; a rufous terminal line; cilia brownish at tips. Hind wing very pale yellow with indistinct postmedial line and diffused subterminal band; the underside whiter, the costal and terminal areas irrorated with rufous, the postmedial line more distinct.

Hab. W. Turkestan, Turkomania, 1 ♂, Issyk Kul. *Exp.* 32 millim.

2736. Cosmia melonina. (Plate CVII. fig. 18.)

Xestia melonina, Butl. Ill. Het. B. M. vii. p. 57, pl. 128. f. 7 (1889); Hmpsn. Moths Ind. ii. p. 170.

Head, thorax, and abdomen orange-yellow mixed with red; palpi red at sides; tegulæ with diffused medial red line; patagia with red bars; tarsi red ringed with yellow. Fore wing orange-yellow slightly irrorated with red, the veins red; subbasal line nearly straight from costa to submedian fold, a red spot beyond it on costa and an annulus in submedian interspace; antemedial line angled inwards on median nervure and outwards in submedian fold; orbicular and reniform large, defined by red, the former rather elliptical, open above and below; a diffused rufous medial line, slightly incurved below costa, angled outwards on median nervure, then oblique; postmedial line defined by clear yellow on outer side, angled outwards below costa, then slightly waved, somewhat incurved at discal fold and strongly below vein 4; the outer part of postmedial area rather darker; subterminal line dark brown defined by yellow on outer side, oblique and slightly sinuous; a fine waved terminal line; cilia yellow with fine brown line near tips. Hind wing pale yellow, the inner area tinged with red, a sinuous medial line and diffused subterminal band except towards costa; the underside yellow, the costal area irrorated with red, a dark discoidal spot, a diffused red bar from middle of costa, sinuous postmedial line and diffused subterminal band.

Hab. Kashmir, Jalauri Pass (*McArthur*), 1 ♂; Punjab, Dharmsála (*Hocking*), 2 ♂, 2 ♀, type. *Exp.* 42 millim.

2737. Cosmia distigmata, n. sp. (Plate CVII. fig. 19.)

♀. Head and thorax orange-yellow largely mixed with red; tegulæ edged with brown behind; abdomen reddish ochreous dorsally suffused with brown. Fore wing orange-yellow suffused and irrorated with red, the veins brown; a curved red subbasal line from costa to submedian fold; antemedial line excurved below costa, bent inwards in cell, angled outwards in submedian fold, inwards on vein 1, then excurved to inner margin; claviform defined by red at extremity only, very large; orbicular and reniform yellow defined by red and with some red in centres, the former

round, the latter with two small white spots at its lower extremity beyond lower angle of cell; an indistinct dark medial shade, oblique from costa to reniform, inwardly oblique below the cell; postmedial line brown, bent outwards below costa, then minutely dentate, excurved to vein 4, then oblique, a diffused oblique fuscous bar beyond it from costa to discal fold, with slight yellow points at costa; subterminal line red defined by yellow on outer side, dentate, slightly angled outwards at vein 7 and excurved at middle; a fine waved brown terminal line; cilia yellow intersected by brown at the veins and with a diffused brown line through them. Hind wing yellow suffused with brown, leaving the costal area, a patch in end of cell, and the termen and cilia yellow; the underside pale yellow, the costal area tinged and irrorated with red, the inner half tinged with brown, an indistinct sinuous postmedial line.

Hab. Punjab, Kulu, Sultanpur (*G. Young*), 1 ♀ type. *Exp.* 44 millim.

2738. **Cosmia albosignata.** (Plate CVII. fig. 20.)

Trigonophora albosignata, Moore, P. Z. S. 1881, p. 355; Hmpsn. Moths Ind. ii. p. 170.

Head and thorax whitish tinged with rufous; antennæ white at base; abdomen ochreous suffused with brown, the hair at base whitish. Fore wing ochreous suffused with pale fiery red and slightly irrorated with brown, the costal area whitish, the inner margin white on medial area, the veins grey-brown; subbasal line indistinct, white, from costa to median nervure; antemedial line white, slightly angled outwards below costa, then oblique, straight; claviform slightly defined by red at extremity; orbicular and reniform yellow tinged with red and defined by red, the former round, the latter slightly angled inwards on median nervure, with two small white spots defined by brown at upper extremity and two at lower extremity; a fine slightly waved medial line, oblique below vein 2; postmedial line whitish defined by brown suffusion on inner side, bent outwards below costa, then excurved, slightly incurved at discal fold and very oblique below vein 4; subterminal line pale, slightly defined by brown on inner side, excurved below vein 7 and at middle, the area beyond it rather browner except at apex; cilia grey-brown. Hind wing pale yellow tinged with brown; the veins brownish, a slight discoidal lunule and indistinct curved postmedial line; cilia yellowish white; the underside pale yellow slightly irrorated with brown, a blackish discoidal spot and indistinct sinuous postmedial line.

Hab. Punjab, Kulu (*G. Young, Hocking*), 4 ♂, 3 ♀, Subathu (*Harford*), 1 ♀, Kasauli, 1 ♀ type. *Exp.* 50–54 millim.

2739. Cosmia pulchella. (Plate CVII. fig. 21.)

Xanthia pulchella, Smith, Can. Ent. xxxii. p. 223 (1900); Dyar, Cat. Lep. N. Am. p. 177.

♂. Head and thorax fiery red; antennæ brown, whitish at base; fore tarsi with slight white rings; abdomen fiery red tinged with brown on dorsum. Fore wing fiery red suffused with purplish fuscous and grey except at base and on terminal area; subbasal line represented by a brown striga from costa; antemedial line black-brown, oblique from costa to submedian fold, then angled inwards on vein 1; orbicular and reniform very narrow, the former oblique, concave towards base, with greyish centre and whitish annulus defined by black, the latter fiery red above, with white U-shaped annulus to lower part, some blackish near inner edge and in centre of lower part, slightly defined by black; a medial line oblique from costa to median nervure, with a blackish shade, except on costal area, between it and postmedial line which is oblique from costa to vein 6 and incurved below vein 4; a strong black subterminal line bounding the dark area, slightly angled outwards at vein 7 and incurved below vein 3; cilia pale rufous with a faint dark line through them. Hind wing brown with a reddish tinge; the termen and cilia fiery red. Underside fiery red; hind wing with dark discoidal lunule.

Hab. Canada, Br. Columbia, 1 ♂. *Exp.* 36 millim.

2740. Cosmia approximata, n. sp. (Plate CVII. fig. 22.)

Head and thorax rufous; pectus clothed with whitish hair; abdomen ochreous dorsally suffused with brown. Fore wing rufous with very slight darker irroration, the veins brown; subbasal line rufous, slightly curved, from costa to submedian fold; the antemedial line arising from costa just beyond it, very oblique, slightly excurved below costa and above inner margin; claviform large, faintly defined by rufous; orbicular and reniform large defined by rufous, the former oblique elliptical; a rufous medial shade oblique below the cell and joining the antemedial line at inner margin; postmedial line excurved below costa, then oblique, very slightly incurved below vein 3; the postmedial area slightly suffused with brown; subterminal line dentate, slightly angled outwards at vein 7 and excurved at middle; a fine waved terminal line; cilia with a fine brown line through them. Hind wing pale yellow, the inner area suffused with brown; a faint slightly curved postmedial line and traces of a diffused subterminal band; the underside with the costal area slightly tinged with rufous, a discoidal point and slight sinuous postmedial line.

Hab. Kashmir, Dugi Pass (*Thompson*), 8 ♂, 1 ♀ type, Jalauri Pass (*McArthur*), 1 ♀, Dana (*McArthur*), 1 ♂, 1 ♀. *Exp.* 36 millim.

2741. Cosmia edentata. (Plate CVII. fig. 23.)

Gortyna edentata, Leech, P. Z. S. 1889, p. 485, pl. li. f. 9.

♀. Head and thorax rufous; abdomen rufous dorsally suffused with brown. Fore wing rufous with very slight dark irroration; traces of a subbasal line from costa to submedian fold with slightly darker patch on costal area between it and the indistinct oblique rufous antemedial line, defined by yellowish on outer side and slightly excurved in cell; orbicular and reniform with yellowish annuli slightly defined by rufous, the former round; a nearly straight diffused fuscous medial shade; postmedial line indistinct, double filled in with yellowish, slightly excurved below costa, then oblique; the postmedial area slightly darker; subterminal line very indistinct, yellowish, defined on inner side by slight fuscous suffusion on costal area, then by traces of small spots, slightly excurved below vein 7 and at middle; a slight waved terminal line; cilia brown at tips. Hind wing pale yellow, the basal and inner areas suffused with brown; a slight brown discoidal spot and postmedial line curved below vein 2; cilia rufous at apex; the underside yellow tinged with rufous, a slight curved postmedial line.

Hab. Japan, Oiwake (*Leech*), 1 ♀, Yokohama (*Pryer*), 1 ♀ type. *Exp.* 36 millim.

2742. Cosmia divergens. (Plate CVII. fig. 24.)

Mesogona divergens, Butl. A. M. N. H. (5) iv. p. 364 (1879); Staud. Rom. Mém. vi. p. 514, pl. 9. f. 8; id Cat. Lep. pal. p. 208.
Xanthia coriacea, Græs. Berl. ent. Zeit. 1888, p. 357.

Head and thorax red-brown; sides of palpi and frons darker brown; antennæ whitish at base; abdomen red-brown dorsally suffused with dark brown. Fore wing rufous irrorated with brown; subbasal line brown, slightly waved, from costa to submedian fold; antemedial line deep red, very oblique; orbicular and reniform large, defined by deep red, the former rather oblique elliptical; a diffused dark oblique medial line from lower angle of cell to inner margin; postmedial line deep red, almost straight, oblique; subterminal line hardly traceable, angled outwards at vein 7 and excurved at middle; a fine waved dark terminal line; cilia brown with pale line at base. Hind wing uniform dark reddish brown; cilia yellowish; the underside ochreous, the inner area tinged with brown, a dark discoidal spot and curved red postmedial line.

Hab. E. Siberia, Ussuri; Japan, Oiwake (*Pryer*), 3 ♀, Yokohama (*Pryer*), 4 ♂, 4 ♀, type. *Exp.* 40–48 millim.

B. Fore wing with the termen and cilia strongly crenulate.

2743. Cosmia acuminata.

Gortyna acuminata, Butl. A. M. N. H. (5) i. p. 83 (1878); id. Ill. Het. B. M. ii. p. 24, pl. xxix. f. 1.

Head and thorax dark red-brown slightly mixed with grey;

palpi fiery red; antennæ whitish at base; fore coxæ and mid and hind femora and tibiæ reddish; abdomen ochreous dorsally suffused with dark brown except at extremity, ventrally tinged with red. Fore wing ochreous almost wholly suffused with dark reddish brown with a greyish gloss, the medial area slightly paler; an indistinct slightly waved ochreous subbasal line from costa to submedian fold; antemedial line deep red-brown defined by ochreous on outer side, oblique, straight; orbicular and reniform rather darker brown with slight ochreous annuli defined by red-brown, the former erect elliptical, the latter with straight inner edge; a slight medial shade, oblique below the cell; postmedial line deep red-brown defined by ochreous on inner side, oblique, very slightly

Fig. 171.—*Cosmia acuminata*, ♂. ½.

incurved, some fuscous suffusion beyond it on costal area before the subterminal line, which is indistinct, yellowish, minutely waved, slightly excurved below vein 7 and at middle; a terminal series of slight brown lunules. Hind wing reddish ochreous suffused with brown except costal and terminal areas; an ill-defined yellowish postmedial line from costa to vein 2; cilia brownish towards apex; the underside yellow, the costal and terminal areas suffused and irrorated with red, the inner area paler, a small blackish discoidal spot and traces of a double slightly waved postmedial line on costal area.

Hab. Japan, Nikko (*Lewis*, *Leech*), 2 ♂, Yokohama (*Jonas*, *Pryer*), 4 ♂, 3 ♀, type; China, Chekiang, Ningpo, Da-laen-San (*J. J. Walker*), 1 ♀. *Exp.* 40–48 millim.

Genus **HOMOGLÆA**.

	Type.
Homoglæa, Morr. Proc. Bost. Soc. N. H. xviii. p. 240 (1875) ...	*hircina.*
Euharveya, Grote, Can. Ent. xxvi. p. 81 (1894)	*carbonaria.*

Proboscis fully developed; palpi porrect to just beyond frons and clothed with long hair; frons smooth, rounded; eyes large, rounded; antennæ of male serrate and fasciculate; head and thorax clothed with hair only and without crests; abdomen dorsally clothed with rough hair at base and without crests. Fore wing short, the apex rounded, the costa and inner margins subparallel, the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 obsolescent from middle of discocellulars; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with black bar from costa before subterminal line ..... *carbonaria.*

B. Fore wing without black bar from costa before subterminal line.

a. Fore wing with distinct grey annuli to orbicular and reniform .... *hircina.*

b. Fore wing with the orbicular and reniform almost obsolete.
*a*¹. Fore wing dull brown irrorated with whitish ..... *californica*.
*b*¹. Fore wing dull brown suffused with black ..... *insinuata*.

2744. Homoglæa carbonaria. (Plate CVII. fig. 25.)

Lithophane carbonaria, Harv. Can. Ent. viii. p. 55 (1876); Smith, Cat. Noct. N. Am. p. 230.

Head and thorax purplish brown mixed with grey; abdomen grey-brown. Fore wing pale ochreous brown, the costal area suffused with grey and fuscous, the inner area with purplish rufous; subbasal line represented by a faint striga from costa; antemedial line very indistinctly double, oblique, slightly waved; orbicular and reniform with fuscous centres and ill-defined grey annuli, the former round; a slight curved medial line; postmedial line very indistinctly double, minutely waved, bent outwards below costa, excurved to vein 4, then incurved; subterminal line indistinct, greyish slightly defined by brown on inner side and with two minute dentate black marks below costa, angled outwards at vein 7 and slightly excurved at middle; a terminal series of slight brown lunules. Hind wing grey with a faint purplish tinge, uniformly suffused and irrorated with fuscous; the cilia pale; the underside whitish irrorated with brown, a small discoidal lunule.

Hab. Canada, Calgary (*Wolley-Dod*), 1 ♂; U.S.A., Oregon, Colorado (*Bruce*, *Cockerell*), 2 ♂, Berkeley (*Oslar*), 1 ♂, 1 ♀, California. *Exp.* 42–44 millim.

Larva. Head slightly bilobed, shining light brown, with dark reticulation and curved vertical band which joins below a large patch before ocelli. Body a little enlarged at joint 12, light brown, thickly mottled and dotted with dark brown, nearly without marks; dorsal line narrow, straight, whitish; subdorsal line similar but more obscure; substigmatal line faintly indicated by its upper edge; cervical shield brown, not shining, with very faint pale dorsal line and distinct subdorsal line; anal plate small, brown, light-edged; feet without shields; spiracles black-rimmed. Food-plant, Willow.—H. G. D.

2745. Homoglæa hircina.

Homoglæa hircina, Morr. Proc. Bost. Soc. N. H. xviii. p. 240 (1875); Smith, Cat. Noct. N. Am. p. 220.

Head and thorax greyish fuscous often slightly tinged with rufous; abdomen greyish fuscous, the lateral fringes and anal tuft

Fig. 172.—*Homoglæa hircina*, ♂. ¾.

tinged with rufous. Fore wing leaden fuscous suffused with grey or pale rufous, sometimes slightly irrorated with black; antemedial line indistinctly double filled in with grey, slightly incurved

in cell; orbicular a small grey annulus; reniform moderate, defined by grey; an indistinct medial line oblique from costa to lower angle of cell; postmedial line defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line grey defined on inner side by blackish points, sometimes below costa only, sometimes nearly throughout, slightly angled outwards at vein 7 and excurved at middle. Hind wing pale grey irrorated with fuscous, thickly on terminal area, and slightly tinged with purplish; the underside with discoidal lunule and indistinct sinuous postmedial line.

Hab. Canada (*Saunders*), 1 ♂, 1 ♀, Alberta, Calgary (*Wolley-Dod*), 3 ♂, 3 ♀. *Exp.* 34–38 millim.

2746. Homoglæa californica. (Plate CVII. fig. 26.)

Orrhodia californica, Smith, Trans. Am. Ent. Soc. xviii. p. 112 (1891); id. Cat. Noct. N. Am. p. 223

♂. Head and thorax dull brown, the hairs tipped with whitish; abdomen dull greyish brown, the anal tuft tinged with ochreous. Fore wing dull brown very slightly irrorated with whitish, the disk faintly tinged with ochreous, the scaling overlaid by some rough hair; subbasal line represented by a slight grey striga from costa; antemedial line indistinct, slightly defined by grey on inner side, oblique, slightly waved, bent inwards to inner margin; claviform absent; orbicular and reniform with hardly traceable greyish annuli, the former round, the latter slightly angled inwards on median nervure; postmedial line indistinct, slightly defined by grey on outer side, bent outwards below costa, excurved to vein 4, then incurved; subterminal line very indistinct, pale, slightly defined by brown on inner side, somewhat angled outwards at vein 7 and excurved at middle; a fine brown terminal line; cilia with a slight whitish line at base. Hind wing pale, nearly uniformly suffused with dull brown, the terminal area slightly darker; cilia whitish; the underside whitish thickly irrorated and suffused with brown, the terminal area slightly darker, a dark discoidal spot and sinuous postmedial line.

Hab. U.S.A., Washington, Pullman, 1 ♂, California, Sierra Nevada. *Exp.* 32 millim.

*2747. Homoglæa insinuata.

Orrhodia insinuata, Smith, J. N. Y. Ent. Soc. xiii. p. 205 (1905).

♀. Head, thorax, and abdomen dull fuscous brown. Fore wing dull fuscous brown suffused with blackish, the markings barely traceable; antemedial line formed of dark shadings, oblique, excurved in interspaces; orbicular moderate, round, with slight pale annulus; reniform large, slightly darker, a little constricted at middle; postmedial line faintly pale, bent outwards below costa, excurved to vein 4, then slightly incurved; subterminal line faint, pale. Hind wing slightly paler and more thinly scaled; the underside paler, with discoidal spot and curved postmedial line.

Hab. U.S.A., Washington, Pullman. *Exp.* 31–34 millim. This species is unknown to me.

ADDENDA.

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2148. **Cucullia agua.** (Plate CVIII. fig. 2.)

Figured from drawing from type in Coll. Barnes.

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2169. **Cucullia oribac.** (Plate CVIII. fig. 1.)

This species has the stigmata defined by black points, and should be placed after No. 2157. *C. perstrigata.* Figured from drawing from type in Coll. Barnes.

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2272. **Oncocnemis polingi.** (Plate CVIII. fig. 3.)

Figured from drawing from type in Coll. Barnes.

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2498 *a*. **Eumichtis lama.** (Plate CVIII. fig. 6.)

Hadena lama, Staud. Iris, xii. p. 370, pl. 6. f. 16 (1899); id. Cat. Lep. pal. p. 174.

♂. Head, thorax, and abdomen grey tinged with brown and mixed with blackish, the last with the dorsal crests darker at tips. Fore wing grey slightly suffused with brown in parts and sparsely irrorated with blackish; subbasal line represented by double black striæ from costa and cell; a slight black streak below base of cell and an oblique streak above inner margin before the antemedial line, which is double, waved, rather oblique from costa to submedian fold; claviform brownish defined by black and with black streak from its extremity to postmedial line; orbicular and reniform large, pale, the former rounded, defined by black except above, the latter on inner side only and slightly angled inwards on median nervure; a slight medial shade from costa to median nervure; postmedial line black, indistinctly double towards costa, then dentate and produced to slight streaks on the veins, excurved to vein 4, then incurved; subterminal line pale, slightly defined on each side by brown and with dentate brown marks before it at middle, angled outwards at vein 7 and to termen at veins 4, 3, the area beyond it somewhat darker; a terminal series of slight black lunules; cilia chequered grey and brown with slight dark line through them. Hind wing whitish tinged with brown, the terminal area suffused with brown; a bisinuate postmedial line ending at tornus; the underside whitish irrorated with brown, a small black discoidal spot and postmedial line excurved to vein 2, then incurved.

Hab. W. Turkestan, Turkomania, 1 ♂; E. Turkestan, Korla.

Exp. 46 millim.

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2506 *a*. **Eumichtis concinna.** (Plate CVIII. fig. 7.)

Apamea concinna, Leech, Trans. Ent. Soc. 1900, p. 61.

♀. Head and thorax whitish mixed with some olive and black; frons with lateral black bars; tarsi fuscous ringed with whitish;

abdomen grey irrorated with fuscous. Fore wing olive-yellow irrorated with black, the medial area suffused with black except towards costa and inner margin, some reddish suffusion beyond the reniform and on postmedial costal area, the veins slightly streaked with black; a sinuous black streak below base of cell; subbasal line double filled in with yellow, waved, from costa to submedian fold; antemedial line double filled in with yellow, angled outwards below costa, then obliquely excurved and waved; claviform represented by two black streaks in submedian interspace to postmedial line; orbicular and reniform yellowish irrorated with fuscous and defined by black, the former oblique elliptical, the latter constricted at middle; a waved medial black line oblique from costa to vein 2; postmedial line double filled in with yellow, bent outwards below costa, then minutely waved, excurved to vein 5, then incurved and with grey-white patch beyond it in submedian interspace, some pale points beyond it on costa; subterminal line pale, defined on inner side by slight dentate blackish marks, excurved below vein 7 and minutely dentate at middle, crossed above and below vein 4 by slight black streaks extending to the terminal series of small black lunules; cilia chequered fuscous and yellowish with slight pale line at base. Hind wing greyish suffused with fuscous brown, a slight discoidal lunule and postmedial line and diffused subterminal band; some blackish terminal lunules; cilia whitish with a dark line through them; the underside white irrorated with fuscous, a dark discoidal lunule, curved postmedial line, diffused subterminal band, and terminal series of small lunules.

Hab. W. China, Wa-ssu-kou, 5000′, 1 ♀ type. *Exp.* 42 millim.

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2742 *a*. **Cosmia andesica**, n. sp. (Plate CVIII. fig. 8.)

Head and thorax greyish rufous; frons with black bar; the ridge of hair on vertex of head slightly mixed with blackish; antennæ blackish; tarsi fuscous with pale rings; abdomen brownish grey. Fore wing pale greyish rufous; antemedial line blackish and angled outwards below costa, then almost obsolete with black points on the veins and in submedian fold, incurved to vein 1 where it is slightly angled outwards; claviform and orbicular absent; reniform a faint pale lunule; postmedial line blackish and oblique at costa, then indistinct with black points on the veins, excurved to vein 4, then strongly incurved; subterminal line represented by a faint dark shade on its inner side, angled outwards at vein 7 and excurved at middle; cilia with a faint dark line through them. Hind wing whitish suffused with brown, the terminal area darker; cilia white with a few rufous scales at base; the underside white slightly tinged with brown, the terminal area suffused with brown from vein 5 to tornus, a diffused brown postmedial line with minute dark streaks on the veins.

Hab. Argentina, Mendoza, Puenta del Inca (*Bayne*), 1 ♂ type. *Exp.* 36 millim.

SPECIES OMITTED.

Anchoscelis bicolor, Wlk. Char. Undescr. Het. p. 70 (1869). ? = *Agrotis compta* ..... Australia.
Calophasia simplex, Mab. Bull. Soc. Philom. ser. 7, ix. p. 64 (1885). Patagonia.
Cucullia amœna, Phil. Linn. Ent. xiv. p. 294 (1860). ? *Notodontidæ*, gen. *Rosema* ..... Chili.
„ *teichii*, Berg, Ann. Soc. Argent. 1885, p. 271. Argentina.
Episema vulpina, Staud. Stett. ent. Zeit. 1888, p. 18; id. Cat. Lep. pal. p. 177 ..... W. Turkestan.
Heliophobus discrepans, Wlk. xxxii. 655 (1865). Type lost. Ceylon.
Heptapotamia eustratii, Alph. Hor. Soc. Ent. Ross. xvii. p. 75, pl. 3. f. 57 (1883); Staud. Cat. Lep. pal. p. 177. ? near *Derthisa* ..... W. Turkestan.
Orthosia darwinii, Staud. Hamburgh. Magalhaens. iv. p. 74 (1899); ? *Episilia* near *frigida* ..... Tierra del Fuego.
„ *deprivata*, Wlk. Char. Undescr. Het. p. 71 (1869). Australia.
„ *gemmella*, Saalm. Lép. Madag. p. 292, f. 258 (1891). ? *Westermannia* ..... Madagascar.
„ *pistacinoides*, d'Aubuis. Arch. Cosmol. 1867, p. 260, pl. 12. f. 3 ..... France.
„ *pulvis*, Guen. Noct. i. p. 361 (1852) ..... Australia.
Polia mirafloresa, Dogn. Le Nat. 1892, p. 185 ..... Ecuador.
„ *punctigera*, Zett. Ins. Lapp. p. 942 (1840) ..... Lapland.
Pseudoleucania ignicola, Staud. Hamburgh. Magalhaens. iv. p. 73 (1899). ? *Episilia* near *antarctica*. Tierra del Fuego.
Xanthia basalis, Wlk. Trans. Ent. Soc. (3) i. p. 88 (1862). Type lost ..... S. Africa.
„ *moderata*, Wlk. Char. Undescr. Het. p. 33 (1869). Type lost ..... Hab.?
Xestia chlorophna, Hübn. Samml. Ex. Schmett. i. p. 16. ff. 73, 74 (1827). = *Chloridea lupata*, Grote ..... Texas.
Xylina ampla, Wlk. xxxiii. 758 (1865). Type lost .... Hab.?
„ *deflexa*, Wlk. xxxiii. 751 (1865). Type lost .... Ceylon.
„ *inchoans*, Wlk. xxxiii. 751 (1865). Type lost .. Ceylon.
„ *infusa*, Wlk. Entom. v. p. 129 (1870). Type lost. Red Sea.
„ *lefebvrei*, Bugn. Ann. Soc. Ent. Fr. 1837, p. 443, pl. 16. f. 4. ? Agrotid ..... Egypt.
„ *ruficauda*, Motsch. Bull. Soc. Mosc. 1866, p. 195. ? = *Graptolitha lamda* ..... Japan.
„ *saxatilis*, Wlk. Char. Undescr. Het. p. 72 (1869). Australia.
„ *signata*, Wlk. xxxiii. 758 (1865). Type lost .... Hab.?
„ *subcostalis*, Wlk. Char. Undescr. Het. p. 34 (1869). Type lost ..... Peru.
„ *terminalis*, Wlk. xxxiii. 757 (1865). Type lost.. Hab.?
Xylophasia offuscata, Berg, Ann. Soc. Argent. iv. p. 201 (1877). = *Calophasia bicolor*, Mab. N. Arch. Mus. i. p. 153, pl. 11. f. 8 (1889) ..... Patagonia.

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